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STANFORD'S COMPENDIUM

OF

GEOGRAPHY AND TRAVEL

FOR GENERAL READING

BASED ON HELLWALD'S 'DIE ERDE UND IHRE VÖLKER'

TRANSLATED BY A. H. KEANE, M.A.I.

NEW ZEALAND CHIEF. *Frontispiece.*

STANFORD'S

COMPENDIUM OF GEOGRAPHY AND TRAVEL

BASED ON HELLWALD'S 'DIE ERDE UND IHRE VÖLKER'

AUSTRALASIA

EDITED AND EXTENDED

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AUTHOR OF 'THE MALAY ARCHIPELAGO,' 'GEOGRAPHICAL DISTRIBUTION OF ANIMALS,' ETC.

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WITH

ETHNOLOGICAL APPENDIX BY A. H. KEANE, M.A.I.

MAPS AND ILLUSTRATIONS

LONDON

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PREFACE.

THE present volume differs somewhat from the rest of this series of works, in consisting almost wholly of new matter. This was rendered necessary by the meagre treatment of Malaysia, Australia, and the Pacific Islands, in Hellwald's book, which was, as regards this portion of it, on so small a scale that I found it impossible to enlarge or add to it without rewriting the whole. The few short paragraphs devoted to the Exploration, to the Natural History, and to the Colonies of Australia, were altogether inadequate as the basis of an English geographical work; and the same may be said of the equally brief notices of the large and important islands of the Malay Archipelago. As an example, I may refer to the account of Borneo, in which the only reference to the two English settlements is as follows:—"while the English have made more or less permanent settlements in Labuan and Sarawak."

This paucity of available material has rendered it necessary for the volume to be practically rewritten, and I have thus been enabled to make it as complete a "Compendium" of the geography of Australasia as was possible within the prescribed limits. I have endeavoured to secure uniformity of treatment by giving the same kind, as well as the same amount, of information, in the case of corresponding islands and colonies, wherever the accessible

materials admitted of it, and to proportion the amount of detail in the description of each colony, island, or group of islands, to their intrinsic importance and general interest. Separate chapters are devoted to the Natural History, the Aborigines, and the Geology, of Australia—the latter being, I believe, the first attempt to give a popular but accurate sketch of the present state of knowledge of this interesting but extremely difficult subject. The characteristics and habits of the various races of mankind, the relics of prehistoric man that occur in the Pacific Islands, and the more interesting features of the natural history of the different regions and great island groups, have all been briefly described.

With every wish to utilise the translation of Hellwald's book as far as possible, I have only been able to do so to the extent of little more than one-tenth part of the present volume.

Notwithstanding the great number of islands and groups comprised within the area treated of, none of any importance have been left without proportionate notice; and I venture to hope that the volume will be found to contain a condensed but accurate summary of geographical information on one of the least known, but most varied and most interesting, of the great divisions of the earth.

CROYDON, *January* 31, 1879.

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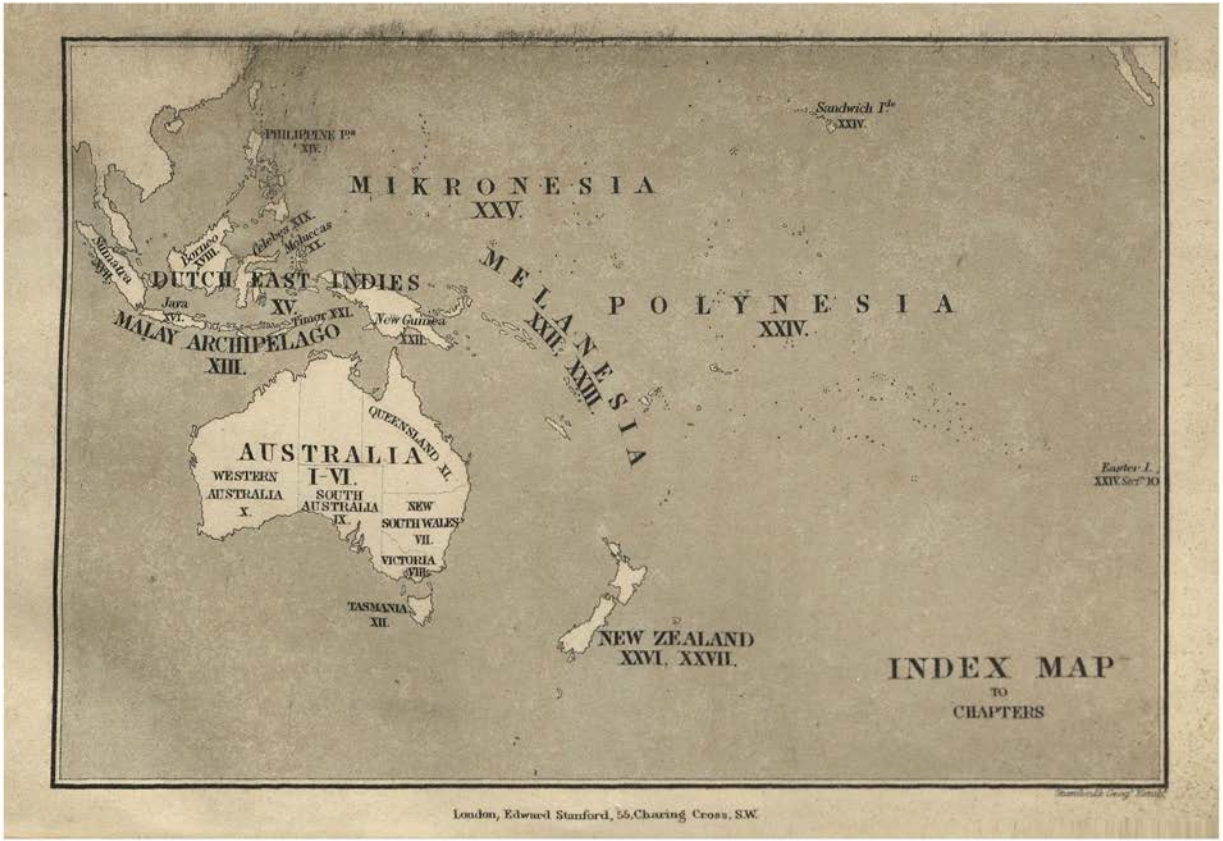
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AUSTRALASIA.

CHAPTER I.

INTRODUCTION.

1. *Definition and Nomenclature.*

THE present volume will be devoted to a description of the great insular land—Australia, and of all the archipelagoes and island-groups which extend almost uninterruptedly from the south-eastern extremity of Asia to more than half-way across the Pacific Ocean. It thus includes all the islands of the Malay Archipelago, the greater portion of which are usually joined to Asia, as well as the various groups of islands in the Pacific which have received special names—as Micronesia, Polynesia, etc. The term Australasia has been used in very different senses. In the original German edition of this work it included the whole area as above defined, except the

Malay Islands west of New Guinea, which were united with Asia. In the last edition of the *Encyclopædia Britannica* (now publishing) it is held to comprise only Australia and New Zealand, with the large islands as far as New Guinea and the New Hebrides. Oceania is the word often used by continental geographers to describe the great world of islands we are now entering upon; but, as defining one of the six great divisions of the globe, Australasia harmonises better with the names of the other divisions, and at the same time serves to recall its essential characteristics—firstly, that it is geographically a southern extension of Asia; and, secondly, that the great island-continent of Australia forms its central and most important feature.

2. *Extent and Distribution of Lands and Islands.*

That portion of the equator stretching from the southern extremity of the Indo-Chinese peninsula at Singapore to the opposite shores of America near Guayaquil, occupies almost exactly 180 degrees of longitude, or half the circumference of the globe; and throughout almost the whole of this vast distance it traverses the blue waters of the Pacific Ocean. This boundless watery domain, which extends northwards to Behring Straits and southward to the Antarctic barrier of ice, is studded with many island groups, which are, however, very irregularly distributed over its surface. The more northerly section, lying between Japan and California and between the Aleutian and Hawaiian Archipelagoes, is relieved by nothing but a few solitary reefs and rocks at enormously distant intervals. Between the tropics, islets, reefs, and groups of coral formation abound; and towards the southern limits of this belt larger islands appear, which increase in size as we go westward, till we reach New

Guinea and the other large islands of the Malay Archipelago. To the eastward, the Pacific is almost entirely destitute of islands, till a few occur near the American coast; so that an unbroken belt of ocean, nearly two thousand miles wide, forms a mighty barrier between Australasia and the continents of North and South America. A little to the south of the tropic of Capricorn, islands almost wholly cease in the Central Pacific; but going westward we meet with the important New Zealand group, and farther on the island-continent of Australia, with its satellite Tasmania, closely connected with New Guinea and the other Malay Islands. It thus appears that all the greater land masses of Australasia form an obvious southern and south-eastern extension of the great Asiatic continent, while beyond these the islands rapidly diminish in size and frequency, till in the far east we reach a vast expanse of unbroken ocean.

Estimated by its actual land area, this division of the globe is only a little larger than Europe; but if we take account of the surface it occupies upon the globe, and the position of its extreme points, it at once rises to the first rank, surpassing even the vast extent of the Asiatic continent. From the north-western extremity of Sumatra, in 95° east longitude, to the Marquesas in 138° west, is a distance of 127°, or more than one-third the circumference of the globe, and about a thousand miles longer than the greatest extent of Europe and Asia from Lisbon to Singapore. In a north and south direction it is less extensive; yet from the Sandwich Islands in 22° north, to the south island of New Zealand in 47° south latitude, is a meridian distance of 69 degrees, or as much as the width of the great northern continent from the North Cape to Ceylon. Its extreme limits are indeed much greater than above indicated, for in the West Pacific the islands extend to beyond 30° north latitude; in the east

we have Easter Island and Sala-y-Gomez full 30 degrees beyond the Marquesas; while in the south the Macquarie Islands are about 600 miles south of New Zealand.

3. *Geographical and Physical Features.*

Within the limits above described are some of the most interesting countries of the world. Beginning at the west, we have the Malay Archipelago, comprising the largest islands on the globe (if we exclude Australia), and unsurpassed for the luxuriance of its vegetation as well as for the variety and beauty of its forms of animal life. Farther to the east we have the countless islands of the Pacific, remarkable for their numbers and their beauty, and interesting from their association with the names of many of our greatest navigators. To the south we have Australia, a land as unique in its physical features as it is in its strange forms of vegetable and animal life. Still farther in the Southern Ocean lies New Zealand, almost the antipodes of Britain, but possessing a milder climate and a more varied surface.

Being thus almost wholly comprised between the northern tropic and the 40th degree of south latitude, this division of the globe possesses as tropical a character as Africa, while, owing to its being so completely oceanic, and extending over so vast an area, it presents diversities of physical features and of organic life hardly to be found in any of the other divisions of the globe, except, perhaps, Asia. The most striking contrasts of geological structure are exhibited by the coral islands of the Pacific, the active volcanoes of the Malay Islands, and the extremely ancient rocks of New Zealand and Tasmania. The most opposite aspects of vegetation are presented by the luxuriant forests of Borneo or New Guinea and the waterless plains of Central Australia. In the Sunda Islands we have an

abundance of all the higher and larger forms of mammalia; while farther to the east, in Australia and the Pacific Islands, the absence of all the higher mammalia is so marked as to distinguish these countries from every other part of the world. Where the land surface is so completely broken up into islands we cannot expect to find any of the more prominent geographical features which characterise large continents. There are no great lakes, rivers, or mountain ranges. The only land-area capable of supporting a great river is exceptionally arid, yet the Murray of Eastern Australia will rank with the largest European rivers, its basin having an area about equal to that of the Dnieper. Mountains are numerous, and are much higher in the islands than in Australia itself. In such remote localities as Sumatra, Borneo, the Sandwich Islands, and New Zealand, there are mountains which just fall short of 14,000 feet. In New Guinea they probably exceed this altitude, if, as reported, the central range situated close to the equator is snow-covered; while in Australia the most elevated point is little more than half as high.

4. *Ocean Depths.*

The land and water of the earth's surface is so unequally distributed that it is possible to divide the globe into two equal parts, in one of which (the land hemisphere) land and water shall be almost exactly equal, while in the other (the water hemisphere) there shall be almost eight times as much water as land. The centre of the former is in St. George's Channel, about midway between Pembroke and Wexford; and the centre of the latter will be about 600 miles S.S.E. of New Zealand. Australasia is therefore situated wholly within the water hemisphere, and many of its islands are surrounded by an ocean which is not only the most extensive but the deepest on the globe.

The Pacific Ocean is deepest north of the equator, where soundings of from 15,000 to 18,000 feet have been obtained over an extensive area; and it is a remarkable fact that the depth increases as we approach the Asiatic continent. Between the Philippines and the Marianne Islands a depth of nearly 27,000 feet has been found; close to Japan, 23,400 feet; and just south of the Kurile Islands, the enormous depth of 27,930 feet. In the South Pacific the depths, as far as yet ascertained, vary between 10,000 and 17,000 feet; but here, too, the deepest soundings are near the larger land masses, close to the New Hebrides (16,900 feet), between Sydney and New Zealand (15,600 feet), and a little south-east of New Guinea (14,700 feet). A comparatively shallow sea extends round the coasts of Australia, which gradually deepens, till at a distance of from 300 to 500 miles on the east, south, and west, the oceanic depth of 15,000 feet is attained. The sea connecting Australia with New Guinea and the Moluccas is rather shallow, with intervening basins of immense depth. In the Banda sea there is a basin at least 12,000 feet deep; while in the Celebes and Sooloo seas are similar basins of over 15,000 feet; and in the China sea, west of Luzon, one of 12,600 feet. Farther westward the sea shallows abruptly, so that Borneo, Java, and Sumatra are connected with each other and with the Malay and Siamese peninsulas by a submarine bank rarely exceeding 200 or 300 feet deep.

5. *Races of Mankind.*

Australasia surpasses most of the great continental divisions of the globe in the variety of human races which inhabit it, and in the interesting problems which they present to the anthropologist. We may reckon at least three, or, as some think, five or even six distinct types of

mankind in this area. First, we have the true Malays, who inhabit all the western portion of the Malay Archipelago from Sumatra to the Moluccas; next we have the Papuans, whose head-quarters are New Guinea, but who range to Timor and Flores on the west, and to the Fiji Islands on the east. The Australians form a third race, universally admitted to be distinct from the other two. Then come the Polynesians, inhabiting all the Central Pacific from the Sandwich Islands to New Zealand. These are usually classed with the Malays on account of some similarity of language and colour, and are therefore erroneously called Malayo-Polynesians. But they present many and important differences, both physical and mental, from all Malays, and the best authorities now believe them to be an altogether distinct race. The now extinct Tasmanians are also of disputed origin, some writers classing them with the Papuans of New Guinea, while others refer them to the same race as the indigenes of Australia. Besides these, we have the dwarfish race called Negritos, who inhabit some parts of the Philippines, and are allied to the Semangs of the Malay peninsula, and perhaps to the Andaman Islanders.

The Australian natives occupy unquestionably the very lowest social position in the human family. The Papuans inhabit the division of Australasia collectively known as Melanesia; and the distinction that has been drawn between the Papuans proper and a special Melanesian type seems needless and fanciful. On the other hand, the Papuan must not be identified with the Australian, the results of extensive philological researches being entirely opposed to such a conclusion. The Australian idioms are characterised exclusively by suffix formations, whereas the Papuan tongues show a preference rather for prefixes,—a fundamental difference altogether excluding any relationship between the two linguistic systems.

The black, woolly-haired, Papuan type is found not only in the Melanesian group, but traces of apparently the same dark race may be detected throughout the whole of Polynesia and Micronesia. Everywhere in Polynesia we meet with individuals, who, in their dark and even black complexions and curly or woolly hair, closely resemble the Papuans.

The light type is, on the other hand, represented by the Malays and Polynesians, who in some places, such as Samoa and the Marquesas, are in no respects inferior to the average European, either in their complexion, physical beauty, or nobility of expression. Nevertheless, these higher tribes are all disappearing under the fatal contact of our much-vaunted civilisation; and nowhere is the steady process of extinction developing on such a grand scale as amongst the South Sea Islanders.

Australasia also affords us an unusual number of interesting examples of immigration and colonisation by higher races. The Malay Archipelago was the scene of the earliest European settlements in eastern Asia, the Portuguese and Spaniards taking the lead, to be quickly followed by the Dutch and English. Each of these governments has colonies in some of the Malay Islands, and the French have more recently established themselves in New Caledonia and Tahiti. Australia and New Zealand are examples of highly successful colonisation, and their recent material progress has been as striking as the contemporaneous development of the Western United States. Here, too, we have examples of the overflow of the vast population of China. In all the cities, towns, and villages of the archipelago, from Malacca on the west to the Aru Islands on the east, the Chinese form an important portion, and often indeed the bulk of the population; and since the gold discoveries in Australia they have extended their emigration into many parts of that exten-

sive country. In Java, and less distinctly in Sumatra and Borneo, there are numerous remains showing an ancient Brahminical occupation, previous to the later Mahometan conquest of the country. And, lastly, throughout the whole archipelago and in Polynesia, we find traces of a recent extension of the Malays and their language at the expense of less civilised tribes.

6. *Zoology and Botany.*

The larger part of Australasia forms one of the great zoological regions of the earth—the Australian—characterised by possessing a number of very peculiar forms of life, as well as by the absence of many which are common in almost every other part of the globe. Its mammalia almost all belong to the marsupial type, which is only represented elsewhere by a few opossums in America. Honey-suckers, paradise-birds, lyre-birds, and cassowaries are confined to it, as well as numbers of very remarkable parrots, pigeons, and kingfishers; while such widespread and familiar types as vultures, pheasants, and woodpeckers are altogether wanting. The snakes and lizards are numerous and peculiar; while insects and land-shells abound, and present a number of the most interesting and beautiful species. The western half of the Malay Archipelago belongs zoologically to tropical Asia, and possesses almost every form of animal life found in the Siamese and Birmese countries, but for the most part of peculiar species.

Plants are equally interesting. The Malayan flora is a special development of that which prevails from the Himalayas to the Malay Peninsula and South China. Farther east this flora intermingles with that of Australia and Polynesia. The Australian flora is highly peculiar and very rich in species; while that of New Zealand is

poor but very isolated. A sketch of the general character of each of these floras will be given farther on.

7. *Geological Relations and Past History.*

The western half of the Malay Archipelago, as far as Java, Borneo, and perhaps the Philippines, has undoubtedly, at a comparatively recent period, formed a south-eastern extension of the Asiatic continent. This is indicated by the exceedingly shallow sea which connects these islands with the mainland, but still more clearly by the essential unity of their animal and vegetable productions. Tigers, elephants, rhinoceroses, tapirs, and wild cattle, are found in Borneo, and many of them even in Java; and the mass of the vertebrata of these islands are either identical with those of the continent, or closely related to them. But as we go farther east to the Moluccas, New Guinea, and Australia, we have to pass over seas of enormous depth, and there find ourselves among a set of animals for the most part totally unlike those of the Asiatic continent, or any other part of the globe. Yet these have certain resemblances to the fauna of Europe during the Secondary period of geology, and it is very generally believed that the countries they now inhabit have been almost completely isolated since the time of the Oolitic formation.

New Guinea, the Moluccas, Celebes, and the island chain as far as Lombok, or some pre-existing lands from which these have been formed, were in all probability still attached to the Australian mainland for some time subsequent to its severance from Asia. Cape York, at the northern extremity of the Carpentarian peninsula, is continued by a chain of high rocky islets all the way to New Guinea, while the depth of Torres Strait itself, flowing between New Guinea and Australia, nowhere exceeds nine

fathoms. On the other hand, the Louisiade Archipelago, north-east of Australia, is nothing more than a submerged portion of the south-eastern extremity of New Guinea. Tasmania must similarly be regarded as the true southern point of Australia, as the intervening Bass's Strait is shallow, and this island was within a comparatively recent geological epoch undoubtedly connected with the mainland.

Hence, in Peschel's opinion, Australia was formerly far more extensive than at present. It has clearly been encroached upon along its eastern seaboard, for here stretches the dreaded Great Barrier Reef, whose coral walls sink to considerable depths below the surface, and which still shadows forth the former limits of the coast line in this direction. On this same eastern seaboard, though much more removed from the mainland, we meet some larger islands which (though perhaps before the Tertiary epoch) may well have formed part of the Australian continent. Conspicuous amongst them is the non-volcanic island of New Caledonia, which is at present slowly subsiding.

Australia must, in fact, be altogether regarded as a continent of the Secondary or early Tertiary period now gradually disappearing, and this phenomenon of subsidence is displayed even on a still vaster scale throughout the whole extent of the South Pacific Ocean. All the so-called "atolls," or true coral islands, have been built up on a foundation of sunken land, and the bottom of the ocean is itself even now subsiding more and more. Of the former lands now submerged beneath the ocean waves, nothing has survived except the highest mountain crests still represented by the countless South Sea Islands.

8. *Geographical Divisions.*

For the purposes of this work we shall consider Aus-

tralasia as consisting of six parts, each of which has a distinctive name and is usually treated as forming a geographical unit, although some of them are really heterogeneous, and should be differently subdivided to accord with their zoological relations and geological history. These divisions are—(1.) Australia, including Tasmania; (2.) Malaysia, including the islands of the Malay Archipelago from Sumatra to the Philippines and Moluccas, and forming the home of the true Malay race; (3.) Melanesia, including the chief islands inhabited by the black and woolly-haired race from New Guinea to the Fiji Islands; (4.) Polynesia, including all the larger islands of the Central Pacific from the Sandwich Islands southward; (5.) Micronesia, comprising the small islands of the North Pacific; and (6.) the New Zealand group.

These will be further subdivided as occasion requires, and will be taken in the order above indicated.

PHYSICAL MAP OF AUSTRALASIA

London; Edward Stanford, 55 Charing Cross, S.W.

AUSTRALIA.

CHAPTER II.

THE PHYSICAL GEOGRAPHY AND CLIMATE OF AUSTRALIA.

1. *Dimensions, Form, and Outline.*

UNTIL recently the Australian continent, especially in its western half, was one of the least known regions of the globe. But for some years past the exploration of the country has made such rapid strides, that we are already in a position to form a clear idea of its general character, while, even regarding its more special features very little will soon remain to be done.

With a total area of 2,983,200 square miles—that is, rather less than Europe—the Australian continent forms a somewhat unshapely mass of land, with little-varied outlines, and a monotonous seaboard, washed on the west by the Indian, and on the east by the Pacific Ocean. In the North it is separated from New Guinea by Torres Strait, 90 miles in breadth; and in the south, from Tasmania by the much-frequented yet dangerous Bass's Strait. Parallel with, and about 60 miles distant from the east coast, stretches the Great Barrier Reef, which, throughout its entire length of 1200 miles, presents only a single safe opening for ships; and which reaches northwards almost to the extremity of York Peninsula. This peninsula, which is the most distinctive geographical feature of the Australian continent, forms, with the more westerly, but

far less boldly developed peninsula of Arnhem Land, the great northern bight known as the Gulf of Carpentaria. Corresponding with this inlet is the Great Australian Bight on the south coast, but neither of them materially affects the general character of this continent as a compact and but slightly varied mass of land. The west coast is, on the whole, richer in bights and inlets, and also possesses several good harbours. In the south, besides the already-mentioned Great Bight, nothing occurs to vary the monotony of the coast line except Spencer and Vincent Gulfs, with the neighbouring Kangaroo Island, and the narrow York Peninsula, not to be confounded with that of like name in the north.

2. *General Contour of the Country.*

The conformation of the land is no less simple than the outlines of the coast. It rises generally from south to north, and from west to east. Mountains of considerable size are found in the east alone, where they stretch in several ranges parallel with the coast from Bass's Strait northwards to the low-lying York Peninsula. But even in Western Australia we meet with elevated uplands sinking abruptly in some directions. On the other hand, the assumption that Australia forms a vast table-land, with elevated borders, and sloping towards the interior, where its lowest level is that of Lake Eyre (70 feet above the sea), must be taken with considerable qualifications. It is, however, so far true in a general way, that lowlands form the prevailing feature of the inland country.

The Australian highlands themselves form no connected whole, being everywhere intersected by depressions of all sorts, to such an extent, that a mere rising of the sea-level of no more than 500 feet would probably convert the whole continent into a group of numerous

islands, varying in size and elevation. These highlands generally present the appearance of hilly upland plains, and are mostly covered with park-like and grassy forests, but without the undergrowth, here called "scrub," which is elsewhere peculiar to Australia. Here the river valleys are generally fertile, and more especially adapted for agriculture. The cultivable land, however, is everywhere distributed somewhat disconnectedly, and in the form of isolated oases over the country.

The gorges through which the streams mostly make their way from the hills, are usually deep and difficult of access, but are nevertheless distinguished, especially in the south, by a rich and almost tropical vegetation. Above the upland plains there often rise rocky mountains, in most cases forming connected chains, in many places presenting steep and rugged escarpments, elsewhere sloping gently and gradually down to the plains. Nor are terrace-like formations altogether wanting, though these are of limited extent and imperfectly developed.

A further peculiarity of the Australian highlands is their distribution mainly along the coast, round about the interior, where no extensive mountain ranges have hitherto been discovered. Of distinct coast ranges six have already been determined, the most important of which is that of Victoria and New South Wales, in the south-east corner of the continent.

3. *Mountains and Table-lands.*

The Victoria highlands form a hilly, upland, and mostly fertile plain, above which rise two distinct ranges, running north and south, the Grampians in the west, and the Pyrenees and Dividing Range to the east; while the southern slopes are distinguished by a series of low volcanic hills, with craters only recently extinct. Farther

THE BLUE MOUNTAINS.

east these highlands are separated by a broad depression from the chain of the Australian Alps, or Warragong Mountains, culminating in Mount Kosciusko (7308 feet), just within the borders of New South Wales, and the highest elevation of the continent. Separated from them by upland valleys are the wooded but infertile Blue Mountains and the Liverpool Range, running exceptionally east and west, and along whose northern slopes stretch the rich and lovely Liverpool Plains. East and west of them extend other more elevated plains, reaching far north, and forming the fine pasture-lands of New England, which stretch almost to the northern limits of the highlands. These consist of the Dividing Range, skirting the valley of the coast river Brisbane on the west, and sinking northwards down to the valley of the Burnett. On the western slopes of the Dividing Range lie the rich

and pleasant grassy plains of the Canning and Darling Downs, watered by the river Condamine, flowing inland.

North of the two last-named rivers begin the Queensland highlands, stretching in a comparatively narrow chain in a north-westerly direction as far as the 17° S. lat., and divided into two formations by a depression in the valley of the Lower Burdekin. The greatest elevations are found at the northern extremity of this range, where it attains near the coast a height of 5400 feet, while between these and the head of the Gulf of Carpentaria is an elevated hilly tract about 2500 feet above the sea. The inland slopes of these mountains are generally very fertile, and, towards the north, are often distinguished for their exuberant vegetation.

Passing west of the Gulf of Carpentaria, we find an extensive tract of high table-land, which appears to attain its greatest elevation where the Alligator River flows between precipitous walls, said by Leichardt to be of the enormous height of 1800 feet.[1] This plateau becomes lower

[1] It is doubtful whether these figures are correct, as they are only founded on an estimate of Leichardt. Unfortunately, still more erroneous ideas have become current as to this part of Australia, owing to the map illustrating Leichardt's *Journal* giving *3800 feet* as the height of these precipices, and these extravagant figures have been repeated in many maps and referred to by many writers down to the present day. There can be little doubt, however, that it is an engraver's or copyist's mistake, and ought to be *1800 feet*, and even that is a mere guess and liable to be much exaggerated. This was pointed out by Mr. Wilson, the geologist of the North Australian Expedition of 1855-56, first in the *Proceedings of the Royal Geographical Society*, vol. i. p. 230, and again in the *Journal* of the same society, vol. xxviii. p. 137 (1858); but no one seems to have taken any notice of his views—another instance of how difficult it is to get an error corrected which has once been promulgated in print on apparently good authority. Twenty years have now passed, and it is time that the mistake should be again pointed out. Messrs. Gregory and Wilson passed across the country about eighty miles south of the point referred to, and they nowhere found it more than about 1600 feet above the sea, and none of the rocky valleys they encountered were more than 600 feet deep. Precipices of 3800 feet exist nowhere but in the vicinity of great mountain ranges, and certainly imply a maximum height above the sea of double

towards the Roper and Victoria Rivers, and then gradually emerges southward into the great central plains; but much of it appears to be of exceeding fertility, and full of varied and picturesque scenery.

Amongst the least known regions are the highlands of the north-west, which are intersected by the Victoria River flowing into the Queen's Channel, and separated southwards, by a low ridge, from the desert lowlands of the interior. Northwards, the land descends in broad terraces, interrupted by mountain chains, and forming

that of the precipice, or 7600 feet. In the Blue Mountains, where the plateau reaches from 3000 to 4000 feet above the sea, the celebrated precipices and ravines of Govat's Leap are about 1000 or 1500 feet, and nothing surpassing them is known in Australia. In 1862 M'Douall Stuart passed across the same table-land nearly parallel to Leichardt's track, and only forty miles distant from it. His journal shows that the country was here no higher than Mr. Wilson found it a little farther south, and the highest cliffs he mentions are from 250 to 300 feet. If we turn to Leichardt's own *Journal*, expecting to find some full description of what would be one of the greatest geographical marvels in all Australia, we discover nothing whatever about it. On the map we find the "steep walls 3800 feet high" indicated as occurring between his stations of November 10th and November 11th. But on these dates we find no mention of anything extraordinary; but on November 17th a great valley is reached, the descent into which is very difficult and required a considerable circuit, owing to the steep rocky walls estimated at 1800 feet high. The map, we find, was drawn from Leichardt's materials by Mr. T. A. Perry, the Deputy Surveyor-General of New South Wales, and was engraved in London by Arrowsmith, and there is no statement that Leichardt supervised or corrected either the draft map or the engraving, which, indeed, he could have had no opportunity of doing, as he had started on his last ill-fated expedition when his *Journal* was published in London. It is now, we think, fully time that this mythical "3800 feet" should be entirely expunged from our maps and geographical works, and that even the sufficiently marvellous "1800 feet" be inserted as merely an estimate and not a measurement. It is necessary to call attention prominently to this error, because, even in a work of such high authority as the new edition of the *Encyclopædia Britannica*, in the article "Australia," we find the old statement repeated as an established geographical fact, as follows:—"On the north side of the continent, except around the Gulf of Carpentaria, the edge of the sandstone table-land has a great elevation; it is cut by the Alligator River into gorges 3800 feet deep."

fruitful plains watered by the forks of the Victoria, while desolate lowlands again stretch away eastwards.

The west Australian highlands are divided into two sections, which, though connected together, are of very different formation. The northern division consists of wide and mostly fertile plains, crossed by isolated chains running east and west, and intersected by the valleys of the Ashburton, Gascoyne, and Upper Murchison, all flowing westwards to the Indian Ocean. The southern section, beginning with the Middle Murchison, presents a very different aspect, of a character highly unfavourable to the development of social culture. With the exception of a few small oases with water, grass, and timber, the broad plains are here extremely unproductive, being almost entirely destitute of fresh water, and overgrown with thickets and low brushwood. There are but few mountain ranges, the elevations consisting more frequently of low disconnected hills. A prominent feature of the land are the large salt basins, containing either brackish water or else nothing but mud largely impregnated with alkalies. Many of these basins doubtless form connected river systems, though certainly of the most imperfect and defective character, such as those of the Upper Swan River, and of the Blackwood in the south; but in most cases their claim to be regarded as such has not yet been established. The western limits of these highlands towards the coast form a series of ridges, of which the most conspicuous is the Darling Range.

Lastly, the south Australian highlands, which are the least in extent, stretch from the south coast northwards along the eastern shores of the St. Vincent and Spencer Gulfs; and are limited eastwards by the lowlands, and on the north by the lacustrine region centering in Lake Torrens. Here the most important chain is the Flinders Range.

4. *The Interior.*

The interior of Australia consists mainly of lowlands, which penetrate even to the coast at certain isolated points where the outer ranges are separated from each other. These lowlands are almost uniformly of an extremely unfavourable character, forming some of the most forbidding and desolate regions on the face of the globe. The flat and, rarely, hilly plains, though often interrupted by detached rocky mountains, have mainly a sandy, clayey soil of a red colour, more or less charged with salt. They are covered chiefly with thickets and "scrub" of social plants, generally with hard or prickly leaves. This "scrub," which is quite a feature of the Australian interior, is chiefly formed of a bushy *Eucalyptus* which grows something like our osiers to a height of eight or ten feet, and often so densely covers the ground as to be quite impenetrable. This is the "Mallee scrub" of the explorers; while the still more dreaded "Mulga scrub" consists of species of prickly *Acacia* which tear the clothes and wound the flesh of the traveller.

There is here, moreover, an extraordinary deficiency of water, and a total absence of springs; nothing in fact but the rare heavy downpours converting the land for the time being into an impassable swamp, which the long-continued ensuing drought again reduces to a stony consistency. Still there are sections of these lowlands presenting special individual features, besides which there exists in the very heart of the continent a connected series of upland plains and ranges, which may be grouped together as forming collectively a central Australian highland region.

In the country immediately north of Spencer's Gulf is an extensive area which may be called the lake district of Australia, and which is nearly a thousand miles in

length from south-east to north-west. First we have Lake Torrens, more than a hundred miles long, but not very wide. Lake Eyre farther north is much larger. To the west is the extensive Lake Gairdner, and to the east of Lake Eyre are Lakes Blanche, Gregory, and several others. All these lakes are salt, and are subject to great fluctuations in size, grassy plains being found in some years where extensive sheets of water at other times cover the country. Around them extends for the most part the dreariest country imaginable, consisting of sandy ridges, either bare or covered with scrub, and almost entirely without permanent supplies of water, although in some places small permanent springs have been discovered. Far to the north-west of Lake Eyre is the equally extensive Lake Amadeus, bordered by salt-crusted flats of treacherous mud which have proved disastrous to many of the explorers. To the north and north-west of Lake Eyre for ten degrees of latitude, the country is almost wholly destitute of permanent water, and this region is also marked by the presence of the "spinifex" or porcupine grass (*Triodia irritans*). This is a hard, coarse, and excessively spiny grass, growing in clumps or tussocks, and often covering the arid plains for hundreds of miles together. It is the greatest annoyance of the explorer, as it not only renders travelling exceedingly slow and painful, but wounds the feet of the horses so that they are often lamed or even killed by it. The tussocks are sometimes three or four feet high, they are utterly uneatable by any animal, and where they occur water is hardly ever to be found.

If we draw a line from the western entrance of Spencer's Gulf on the south, to the mouth of the Victoria River in the north, we shall have on the west side of this line an almost unbroken expanse of uninhabitable country reaching to the settlements of West Australia. This vast area, extending from the north-west coast to the shores of

the great Australian Bight, is, roughly speaking, about 800 miles square. It has been crossed by several explorers with the greatest difficulty; and although a few oases have been found at long intervals, its general character is that of a waterless plain interspersed with low and sometimes rocky hills, at times absolutely barren, but usually covered with dense scrub or with the spiny *Triodia*.

A little to the east of the same line, and nearly in the centre of the continent, is a group of highlands, the Macdonnel Ranges and Mount Stewart, among which are grassy plains, fertile valleys, and more or less numerous watercourses. These are continued towards the north by the Murchison and Ashburton Hills, till they merge into the northern plateau of the Victoria and Roper Rivers. Farther east is an unknown country, most of which is probably arid and uninhabitable where it is not absolutely desert, and this stretches away till we reach the more fertile plains of Western Queensland.

It is thus evident that Australia abounds in basins of inland water, which, however, are mostly saline and are seldom flooded all the year round. They also differ from other lakes, in so far as they depend for their supplies mainly on the rainy monsoons, possessing no regular influents or even surface springs, and lying mostly in the centre of waterless, stony deserts. For Australia, in this respect more African than Africa itself, is essentially the land of wastes and steppes. As its most elevated regions lie to the windward of the continent, the trade-winds in surmounting these lofty ranges already lose a large portion of their moisture before reaching the interior. Hence the steppes begin close to the western slopes of the eastern coast ranges. At first well-watered grazing grounds, such as the Darling Downs, they gradually become drier and drier as we proceed westwards. The air is further heated in the heart of the continent by

contact with the burning soil, preventing the condensation of the humidity that still remains in the easterly winds. Of constant recurrence in the journals of the wearied travellers crossing the interior of the continent is the remark, that the clouds gather, the heavens become overcast, threatening a downpour every moment, but always with the same disappointing result. The clouds disperse before the vapours are sufficiently condensed to produce rain. The heated ground raises the temperature of the superincumbent air to such a degree that the already perceptible moisture is again dissolved into vapour. The fatal consequence is, that Australia possesses nothing but coast streams or intermittent watercourses in the interior, and although it appears on the maps as a large island, the heart of the country is occupied by deserts as arid as those of the great continents.

5. *Rivers.*

Foremost among the river-valleys is the region of the Murray and Darling in the south-east of the continent, forming jointly a water system worthy to be compared with those of the Old and New Worlds. Like the Amazon, it sends out forks and ramifications crossing many degrees of latitude and longitude, and it gathers its waters from the most opposite quarters. All the inland rivers of East and South Australia, between the 26th and 36th parallels drain into one or other of the two main streams, whose joint course stretches across thirteen degrees of the meridian, forming a triangle the points of which might be represented in Europe by the cities of Turin, Königsberg and Belgrade. The volume of water flowing through the winding beds of these rivers and creeks, though at times swollen to enormous proportions, is usually far from considerable, and occasionally for months together very limited.

As in this continent generally, the scenery of the Murray is cast on very grand lines. Pleasant, undulating, and graceful curves stretching away for interminable distances, and retaining the same character for days together, are succeeded in one place by bold mountain masses, in another by boundless plains, vast as the ocean, and

THE MURRAY.

relieved only by the shimmering and hazy reflection of some distant tree, or by the equally deceptive image of a few stunted shrubs exaggerated out of all proportion by the mirage and other atmospheric illusions. Seen from its high banks, the river presents almost everywhere the picture of a majestic stream, the grandeur of which is often enhanced by the numerous channels, lakes, and lagoons adding animation to the surrounding riverain scenery.

Nevertheless, this region consists largely of dreary, waterless plains, generally covered with dense bush, rarely relieved by low woodlands and open glades. It forms two distinct sections, that of the Murray on the south and the Darling on the north. The former, which is the most important of all Australian streams, rises in the Warragongs or Australian Alps, and after receiving the waters of the Goulburn and Loddon, is joined by the Murrumbidgee, swollen by the Lachlan from the north-east, whenever that stream does not run dry. A little farther on it forms a confluence with the Darling, also from the north-east, and which, like the Murray, is itself formed by the union of two head streams, collecting all the waters flowing from the western slopes of the New England and other coast ranges.

On the east coast the Fitzroy and Burdekin rivers are the most important, the latter draining an extensive area in a north and south direction, and about 200 miles inland. The northern rivers are numerous, but not important. The Flinders, which enters the head of the Gulf of Carpentaria, is the most extensive, its tributaries having their sources in the elevated country about 300 miles to the south and south-east. In the north-west the only rivers of importance are the Roper and Victoria, which flow through an elevated country, through deep gorges and among magnificent scenery, and the lower courses of which are navigable for considerable distances. On the west coast there are no rivers of importance; for though several of them have courses of 200 or 300 miles, they scarcely exist in dry seasons, and are only navigable for boats for very short distances. In the south there is a complete absence of rivers from near King George's Sound to Spencer's Gulf.

The drainage of the interior is effected by numerous creeks and watercourses which only run after periods of

rain, and which either lose themselves in the desert or terminate in some of the depressions which form the salt lakes. The most extensive of these inland rivers are the Barcoo and the Finke, which flow into Lake Eyre from the north-east and north-west respectively. These drain a great extent of country, but usually form mere series of water-holes.

The rivers of Australia are, almost without exception, subject to excessive irregularities of drought and flood. In the eastern half of the continent especially, great floods occur at long intervals, when rivers rise suddenly, overflow their banks, and carry devastation over wide areas. At other times the rains fail for years together, and rivers which are usually deep and rapid streams become totally dried up. The state of the country is then deplorable; not a blade of grass is to be seen, and cattle perish in great numbers. A tract of country may thus be described as a flooded marsh, a fertile plain, or a burnt-up desert, according to what happens to be the character of the seasons at the period when it is visited.

6. *Climate of Australia.*

Although Australia is such an extensive country, and is divided between the tropical and temperate zones, it has nevertheless much less variety of climate than might be supposed. It may generally be described as hot and dry, and, on the whole, exceedingly healthy. In the tropical portions the rains occur in the summer, or from November to April; while in the temperate districts they are almost wholly confined to the winter months. The greatest quantity of rain falls on the east coast, being 50 inches at Sydney, diminishing considerably inland, so that at Bathurst (96 miles from the sea) it is only 23 inches, at Deniliquin (287 miles) 20 inches, and at Wentworth

(476 miles) 14 inches. In the south, at Melbourne and Adelaide, the rain is about 25 and 20 inches; in Western Australia about 30 inches; in Queensland from 40 to 80 inches on the coast, but much less at a moderate distance inland. From Rockingham Bay northwards the rains are tropical. The temperature of course varies greatly with latitude and position. In the extreme south, at Melbourne, the temperature varies from about 30° to 100° Fahr. in the shade, the mean being 58°, or the same as Lisbon. At Sydney the mean is about 5° higher. At Adelaide, though farther south, the mean temperature is somewhat greater than at Sydney; while at Perth, farther north, it is about the same. South Australia and Victoria, and in a less degree New South Wales, are subject to hot winds from the interior of a most distressing character, resembling the blast from a furnace. The thermometer then rises to 115°, and occasionally even higher when extensive bush fires increase the heat. Sometimes the hot winds are succeeded by a cold south wind of extreme violence, the thermometer falling 60° or 70° in a few hours. In the desert interior these hot winds, nearer to their source, are still more severe. On one occasion Captain Sturt hung a thermometer on a tree shaded both from the sun and wind. It was graduated to 127° Fahr., yet the mercury rose till it burst the tube! The heat of the air must therefore have been at least 128°, probably the highest temperature recorded in any part of the world, and one which, if long continued, would certainly destroy life. The constant heat and drought for months together in the interior are often excessive. For three months Captain Sturt found the mean temperature to be over 101° Fahr. in the shade; and the drought during this period was such that every screw came out of their boxes, the horn handles of instruments and combs split up into fine laminæ, the lead

dropped out of pencils, their hair and the wool of the sheep ceased to grow, and their finger-nails became brittle as glass.

Notwithstanding the extreme heat and sudden changes of temperature, the climate of most parts of Australia is universally admitted to be exceptionally healthy. Epidemic diseases are almost unknown, and the death-rate for the whole white population is under 19 per thousand, that of England and Wales being 25. On the east coast, sea-breezes during the day render the heat less oppressive, while in the winter westerly winds prevail. On the west coast, the heat and dryness of summer are also tempered by sea-breezes and by occasional showers and thunderstorms: while in the four winter months north-west winds prevail, accompanied by abundant rains. Although subject to great occasional irregularities, the climate of Australia in the temperate zone is on the whole equable, storms and electrical disturbances being less frequent than in England.

7. *Climate of New South Wales.*

Mr. H. C. Russell, the Government Astronomer for New South Wales, having recently published a volume devoted to the meteorology of this colony, we will give a summary of his interesting results in further illustration of the specialties of Australian climate.[1]

[1] The self-registering tide-gauge established by Mr. Russell at Newcastle, near Sydney, has been the means of making some interesting observations on the rate of propagation of vibrations caused by earthquake shocks. In May 1877 there was an earthquake on the coast of Peru, when ships at sea felt powerful vibrations (not waves). Mr. Alfred Tylor, F.G.S., having been making experiments on the rate of transmission of such vibrations, wrote to Mr. Russell to look at the register of his tide-gauge at a date specified, and was informed that unusual vibrations of the registering pencil had occurred at the time indicated. The rate of transmission of these vibrations across the entire Pacific Ocean was about five miles a minute.

Within the colony of New South Wales itself may be found a great range of climates—from the cold at Kiandra, where the thermometer sometimes falls 8 degrees below zero, and where eight feet of snow has fallen in a single month, to the more than tropical heat and extreme dryness of the inland plains, where frost is never seen, and the thermometer in summer often for days together reaches from 100° to 116°, and where the average annual rainfall is only 12 to 13 inches, sometimes even none at all falling for an entire year.

The climate of this part of Australia is beneficially affected by a warm equatorial current setting south along the coast. This furnishes moisture in the summer, and mitigates the cold of winter. Rain here comes from the east or south-east with great storms of wind, and it is sometimes so violent that on several occasions 20 inches have been known to fall in twenty-four hours. On the east of the mountains the average rainfall is 40 inches, and the number of wet days 102; while in the interior, on the west of the mountains, it is about 14 inches with 70 wet days.

The summer heat on the eastern watershed is less than in the interior, but to many persons it is more trying, because it is a moist tropical heat, whereas in the interior it is dry and bracing.

8. *Winds.*

In order to comprehend the nature and causes of the winds in this country, it will be well to consider, first, what would take place if the greater part of Australia were sunk beneath the ocean. The trade-wind would then blow steadily over the northern portions from the south-east, and above it a steady return current would blow to the south-east, while strong westerly and southerly winds would prevail over the southern half of the country.

Into this system of aerial currents Australia introduces an enormous disturbing element, of which the great interior plains, and the main chain of mountains running along the east coast, form the most active agencies in modifying the winds. The former, almost treeless and waterless, acts in summer like a great oven with more than tropical heating power, and becomes the chief motor force of Australian winds, by causing an uprush, and consequent inrush on all sides, especially on the north-west, where it has sufficient power to draw the north-east trade-wind over the equator and convert it into a north-west monsoon; which has the effect of obliterating the south-east trades properly belonging to this region. The north-west monsoon being heated in the interior, rises up and forms part of the great return current from the equator towards the south pole.

That there is a constant overhead current from north-west to south-east may be traced, day after day and month after month, by the small clouds which mark its lower limits passing in ceaseless streams to the south-east. The height of this current is generally about 5000 feet, but it is sometimes much lower, so that occasionally it is possible to fly a kite at Sydney, which rises into it and is carried away to the south-east, while the sea-breeze below is blowing from the east or north-east. These sea-breezes are also due, primarily, to the inflow towards the heated interior, but meeting with the mountain ranges they are usually diverted towards the south-west, and thus appear as north-east winds, a diversion partly caused by the friction of the great north-west current overhead. When the monsoon is most violent it carries off much of the sea-breeze with it, producing a depression of the barometer, when southerly winds rush in till the barometer rises again. Thunder and lightning usually follow these changes. The heated north-west monsoon has been

felt in Tasmania at a height of 5000 feet. In winter the heating influence of the interior ceases, the trade-winds move farther north, and the normal westerly winds prevail with storms and rain from the south.

The well-known southerly "bursters" are violent storms of wind occurring in summer (November to February), when the weather is fine and hot with a north-east breeze. If then the barometer falls fast in the forenoon, a "burster" may be expected before night, usually accompanied by thunder and much electrical excitement. Its approach is indicated by an appearance as if a thin sheet of cloud were being rolled up before the advancing wind. Clouds of dust, which penetrate everywhere, announce the coming of the wind, which reaches its greatest violence in an hour or two, varying from 30 to 70 miles an hour, though sometimes reaching 90, and on one occasion 150, when great damage was done. The change is sometimes very sudden. It may be a fresh north-east breeze, and in ten minutes a violent gale from the south. They usually end with a thunderstorm and rain. In the autumn (February) the rainfall accompanying these storms is often excessive. On the 25th of February 1873 nearly nine inches of rain fell in about the same number of hours. At Newcastle, on March the 18th, 1871, the heaviest rainfall ever recorded in Australia occurred; ten and a half inches of rain falling in two and a half hours, accompanied by a fearful squall of wind and rain with thunder and lightning. During the whole storm more than twenty inches of rain fell in twenty-two hours.

The hot winds, which are another remarkable feature of the meteorology of Australia, occur in New South Wales usually from three to seven or eight times during the summer; but many more pass overhead, their only effect being a rise in the temperature. The temperature

at Sydney varies from 80° to 110°, though it rarely reaches 100°. These winds are felt over the whole east and south of Australia, and they are even said to be distinctly perceptible as far as New Zealand. The hot wind generally comes on in the forenoon and lasts all day; but sometimes it only blows for an hour or two. It is preceded by very fine weather, with a gradually falling barometer and a diminishing sea-breeze. It sometimes passes away quietly, but is more usually ended by the southerly "bursters" already described. Hot winds are oppressive, but not absolutely injurious to health, yet their effect on vegetable life is very marked. Plants all droop, and those with tender leaves shrivel up as if frost-bitten; and there is one instance on record in which all the wheat was destroyed over 30 miles of country on the Hunter River. In Victoria, and especially in South Australia, the hot winds are more frequent and last longer, and their effects are more injurious. They are evidently produced by the sinking down to the surface of that north-westerly current of heated air which, as we have seen, is always passing overhead. The exact causes that bring it down cannot be determined, though it evidently depends on the comparative pressures of the atmosphere on the coast and in the interior. Where from any causes the north-west wind becomes more extensive and more powerful, or the sea-breezes diminish, the former will displace the latter and produce a hot wind till an equilibrium is restored. It is this same wind passing constantly overhead that prevents the condensation of vapour, and is the cause of the almost uninterrupted sunny skies of the Australian summer.

9. *Snow.*

There is only one instance known of snow having fallen so as to lie on the ground in Sydney. On June

28, 1836, it snowed for half an hour, and lay on the ground in places for an hour. In other parts of the colony, however, the case is different. On the southern mountains and table-lands three feet of snow sometimes falls in a day, and in 1876 a man was lost in the snow on the borders of Gipps Land and New South Wales. In the Maneroo plains east of the Australian Alps in July 1834 a snowstorm lasted three weeks, and on the mountains the snow lay from 4 to 15 feet deep, burying the cattle in groups. The higher parts of the railway from Sydney to Bathurst have been seen covered with snow for 40 miles continuously. At Kiandra in the Australian Alps, one of the highest and coldest towns of New South Wales and 4600 feet above the sea, snow falls continually from May to November, sometimes for a month together. Many of the higher mountains are covered with snow all the winter, and in many of the valleys and ravines near the summits snow lies in patches all the summer. Below the summit of Mount Kosciusko a bed of snow 40 feet thick was found on the longest day, and it accumulates in such large masses that some may always be seen from any elevated point commanding a good view of the higher mountains. On Mount Kosciusko it even forms glacier masses in the deep ravines, which are more or less permanent. Even at heights of 5000 feet, in situations favourable for the accumulation of snow, it remains all the year. Yet the highest mountain (7175 feet) is considerably below the line of perpetual snow for this latitude, since on Mont Blanc, nine degrees farther from the equator, the snow-line is 8500 feet above the sea. The difference is probably due to the presence of the warm oceanic current supplying abundance of moisture from below, while the rapid radiation through a pure and usually clear atmosphere above, lowers the temperature so as to condense

the vapour into snow; thus affording an illustration of the well-known maxim, that heat to produce an ample supply of vapours is essential to the production of excessive falls of snow.

10. *Droughts and Floods.*

The rainfall in all parts of Australia is very unequal, but less so on the west and south coasts than on the east and in the interior. At Sydney the annual rainfall has varied from 22 to 82 inches; the consequence of such irregularity being that the country is subject to alternations of droughts and floods. In the table-land west of the main range, and 25 miles south-west of Goulburn, at an elevation of 2260 feet above the sea, is situated Lake George. In 1824 it was 20 miles long and 8 miles wide, enclosed by thickly-wooded steep hills. It gradually diminished in size, till about 1837 it became quite dry and was converted into a grassy plain. After a few years it gradually filled again, till in 1865 it was 17 feet deep. Two years later it was only two feet deep; but in 1876 it was again 20 miles long and about 20 feet deep, and the old water-marks show that it has sometimes reached three feet higher.

On the east coast of New South Wales hardly any rain fell in the years 1814 and 1815; and again in 1827, 1828, and 1829, there was a long period of drought, during which the beds of deep and rapid streams became dry for miles. Every blade of grass was destroyed over large tracts of country, and cattle perished by thousands. At intervals of a few years similar droughts have occurred, and the present year, 1878, has seen one of great severity. Alternating with these droughts are disastrous floods, caused by the enormous and sudden rainfalls already referred to. On March 22, 1806, the Hawkesbury river rose in some places 93 feet above its

ordinary level; two hundred wheat stacks were swept away, many lives were lost, and hundreds of persons only escaped by climbing up trees or to the roofs of houses. In 1809 there was another and still greater flood, when the water rose 50 feet at the town of Richmond. In 1867 this was surpassed by a rise of 63 feet at Richmond, only five feet below the highest spot of ground in the town, so that the destruction to property may be imagined. In consequence of these floods landslips occurred; fifty acres of land being washed away at the confluence of the Hawkesbury and Grose rivers. The Hunter, Darling, Murrumbidgee, and many other rivers, have been subject to similar floods.

CHAPTER III.

THE NATURAL HISTORY OF AUSTRALIA.

1. *Characteristics of Australian Vegetation.*

In Australia the vegetable, no less than the animal kingdom, presents features altogether different from those of other continents; and the naturalist finds himself in a strange and isolated world, having comparatively little in common with other divisions of the earth. In order to exhibit clearly the main peculiarities which distinguish the vegetable world in Australia, we shall first describe the general aspects and prominent features of the vegetation, and then discuss some of the botanical characteristics which throw light upon its early history and relations with other parts of the globe.

The extensive seaboard is everywhere characterised by a vegetation of a remarkably sombre and uniform colour, occasioned mainly by the peculiar foliage of the Eucalyptus and scrub, the leaves of which lack that striking contrast of shade on their outer and under surfaces, which contributes so largely to the shifting tints of our European woodlands. Instead of spreading out horizontally, the foliage mostly hangs vertically from the branches, hence producing little shade in the forests; travelling through which is thereby rendered all the more fatiguing in the hot midday sun.

The uniformity of this vegetation is intensified by the great area over which the same forms extend. The change of the seasons also, elsewhere causing the fresh

and vivid green of the early spring to be succeeded by the softer summer hues and glorious golden tints of autumn, is marked by no such striking contrasts in the unvarying mantle of dull olive green clothing the

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Australian woodlands. Yet in the midst of this apparent monotony we light occasionally on spots covered by a gigantic and exuberant growth, here and there disposed in stately avenues free of scrub or underwood, elsewhere

opening on sunny glades and sloping valleys, watered by purling streams and clothed with the softest verdure. In other places the woodlands form a fringe round an open country, varied with hill and dale, and pleasantly relieved with isolated clusters of forest trees, covered with the richest herbage, and decked with flowers of the most varied hues and forms. Or else the woodlands change to an interminable thicket, where countless flowering shrubs and lovely twining plants form an impenetrable mass of tangled foliage, such as can be matched by the virgin forests of Brazil alone.

A striking contrast to this luxuriant vegetation of the woodlands is presented by that of the various kinds of "scrub" and heath, which cover so large a portion of the surface of Australia. An excellent observer, the Rev. J. E. Woods, remarks on the incorrectness of statements as to the general fertility of a country so largely covered by what are practically deserts. Just as Tartary is characterised by its steppes, America by its prairies, and Africa by its deserts, so Australia has one feature peculiar to itself, and that is its "scrubs." Not only do they recur constantly with the same soil and the same peculiarities, but even in widely distant districts their flora is very similar. There is something in them peculiarly Australian, and as they are repeatedly mentioned in almost every page of every book on Australian exploration or travel, some account of what constitutes a "scrub" will be interesting to our readers, more especially as the writers of such works almost invariably look upon them as too familiar to need description. One of the most common terms used by explorers is "Mallee" scrub, so called from its being composed of dwarf species of Eucalyptus, called "Mallee" by the natives. The species that forms the "Mallee" scrub of South Australia is the *Eucalyptus dumosa*, and it is probable that allied species

receive the same name in other parts of the country. The appearance of the "Mallee" is something like a bushy willow or osier, the stems growing close together like reeds, so close that there are often ten or twelve in a square foot of ground. They grow 14 feet high without a branch, and when a road is cut through a scrub of this kind it appears like a deep trench, or as if enclosed by high walls. The aspect of such a country is very gloomy. From any eminence you see nothing but a dark brown mass of bushes as far as the eye can reach. The soil is generally a yellow sand, and when a patch of it is visible it gives an air of sterility in exchange for the monotony of the scrub. But the surface is generally unbroken, seeming like a heaving ocean of dark waves, out of which, here and there, a tree starts up above the brushwood, making a mournful and lonely landmark. On a dull day the view is most sad, and even sunlight makes it little more cheerful, for seldom bird or living thing gives variety to the scene, while light only extends the prospect and makes it more hopeless. In the south-eastern parts of South Australia there is a tract about 9000 square miles in extent covered with an unbroken expanse of this scrub, and similar tracts of it occur over every part of the southern half of Australia.

Still more dreaded by the explorer is the "Mulga" scrub, consisting chiefly of bushy acacias. These grow in spreading irregular bushes armed with strong spines, and where matted with other shrubs form a mass of vegetation through which it is impossible to penetrate. Fortunately this is far less common than the "Mallee," or the labour of the explorer would be still more distressing than it is. Other scrubs are formed chiefly by the "tea-tree" of the colonists. This is a species of Melaleuca, a beautiful flowering shrub allied to the myrtle, and very abundant in all parts of Australia. These do not grow

in such dense masses; and, mingled with a variety of other shrubs, form one of the ordinary and least disagreeable of the scrubs which occupy so much of the interior.

Next in extent to the "Mallee" scrub is the country occupied by dwarf shrubs, and generally known as "heath." This usually consists of vast level sandy tracts, dusty in summer and boggy in winter, supporting no grass, and but a few stunted trees, and everywhere covered with a tangled mass of woody vegetation about two feet high. In spring this country is excessively beautiful from its varied and bright-coloured flowers, among which are the numerous species of Epacris, Boronia, Correa, Dilwynnia, and other ornaments of our greenhouses. Mingled with these are larger bushes of Melaleuca and Banksia. The latter is sometimes abundant, and is called the native honeysuckle or bottle-brush tree. It is an irregularly branched bushy tree, with wedge-shaped leaves, and studded all over with yellow flowers shaped like a bottle-brush, but as the old decaying flowers and seed-vessels remain for years on the tree, it always looks more or less unsightly.

The most terrible production of the Australian interior is, however, the "spinifex," or porcupine grass (*Triodia irritans*), which extends for hundreds of miles over sandy plains, and probably covers a greater amount of surface than any other Australian plant. It does not, however, appear to extend south of about 28° south latitude, so that the settled districts are wholly free from it.

Many remarkable types of vegetation give a special character to Australian scenery. Foremost among these are the noble gum-trees of the genus Eucalyptus. These often attain a height of more than 250 feet, and a girth of from 12 to 20 feet. The banks of the rivers and watercourses are generally bordered with these gigantic trees, which mark the course of the stream from a long distance as it

wanders through the open plains or low desert scrub. Other species form dense forests on the mountain slopes, and among these have been discovered the true giants of the vegetable kingdom, surpassing even the far-famed Wellingtonias of California. In the Dandenong Range, about forty miles east of Melbourne, the ravines contain numerous trees over 420 feet high, and one fallen tree was discovered of the enormous length of 480 feet—undoubtedly the grandest tree in the world. The numerous species of Eucalyptus, known as red gum, blue gum, stringy-bark, iron-bark, box, peppermint, and many others, produce valuable timber, each having special qualities adapting it for certain uses.

The Casuarina, Beefwood, or Shea-oak of the colonists, are names applied to a remarkable group of leafless trees, whose long drooping rigid branchlets, resembling those of our "horsetails," render them the most singular and picturesque objects of the Australian flora. The wood is as good as our oak, and of the colour of raw beef, whence its local names. These trees are most abundant in the south and west, and are often found in the barren wastes of the interior.

The grass-trees (Xanthorrea) are a peculiar feature in the Australian landscape. From a rugged stem, varying from 2 to 10 or 12 feet in height, springs a tuft of drooping wiry foliage, from the centre of which rises a spike not unlike a huge bulrush. When it flowers in winter, this spike becomes covered with white stars, and a heath covered with grass-trees then has an appearance at once singular and beautiful.

Nowhere in the world are Acacias so abundant as in Australia, which contains nearly 300 species of the genus. They abound in all parts of the country, and are called "wattles," their elegant yellow blossoms, usually fragrant, adding greatly to the beauty of the country in early

spring. Aromatic foliage and odoriferous flowers are especially abundant in Australia, so that the "bush" is more or less fragrant throughout the year.

In contrast to the usually arid and somewhat monotonous aspect of Australian vegetation, many of the deep ravines and sheltered valleys of the eastern slope of the mountains of New South Wales are clothed with forests of wild luxuriance. One of these districts, which from being easily accessible is better known than the rest, is Illawarra, situated about fifty miles south of Sydney, between the coast range and the ocean. On descending into these valleys we leave a dry and arid country with a stunted vegetation, and find ourselves in a damp and humid atmosphere sheltered by rocky barriers, and presenting on every side a luxuriant wealth of foliage. Here are graceful palms rising to 70 or even 100 feet; the Indian fig with its tortuous branches, clothed with a drapery of curious parasites; while graceful tree-ferns, 30 feet high, flourish in the damp atmosphere of the sheltered dells. The forest is often so rank with creepers, ferns, and vines, as to be quite impassable, and the gigantic stag-horn fern grows from the topmost limbs of the loftiest trees. One of the most striking plants of Australia, the "flame-tree," belonging to the natural order Sterculiaceæ, when covered with its large racemes of red flowers, renders the Illawarra mountains conspicuous for miles out at sea.

Among the more remarkable individual plants of the Australian flora, we may mention the fire-tree of West Australia, which belongs to the same natural order as our mistletoe (Loranthaceæ), and is the only non-parasitical plant of the order. When in flower it is so covered with its orange-coloured blossoms that it is compared to a tree on fire. The *Stenocarpus Cunninghami* of Queensland is a tree which grows 50 feet high, and when in bloom

displays one gorgeous mass of orange-tipped crimson stamens. The "Warratah" of New South Wales grows with a single stem about six feet high, bearing at its extremity a crimson blossom resembling a full-blown peony. This and the last belong to the Proteaceæ, a family highly characteristic of Australia. Still more remarkable is the rock-lily, a giant among its allies; for it sends up a flower-stalk 30 feet high, bearing at its summit a crown of lily-like flowers several feet in circumference. Lovely bulbous plants and strange-flowered terrestrial orchids also abound; so that, although much of the Australian landscape is barren-looking, and for many months in the year the grass and herbage is almost completely parched up, yet no country in the world affords a greater variety of lovely flowers or more strange and interesting forms of vegetable life.

Besides the vegetation of the plains and lower hills, the loftier mountains of Australia possess a singular and beautiful alpine vegetation, in which the productions of the two hemispheres are strangely intermingled. Here are found species of Ranunculus, Geum, Gentiana, Gaultheria, Myosotis, Senecio, and many others, exactly corresponding to the alpine plants of Europe, though mostly of distinct species; while mingled with these are dwarf alpine forms of purely Australian groups, such as Oxylobium, Brachycome, Acacia, Hovea, and Bossiæa. These distinct types occur on all the mountains of Victoria and New South Wales, which reach an altitude of 5000 feet; and, strange to say, not only are many of the genera peculiarly northern, but a considerable number of species are absolutely identical with those of Europe. Sir Joseph Hooker has given a list of thirty-eight species of plants which are almost entirely restricted to the colder parts of the northern hemisphere, but which yet reappear on the mountains of Australia, a few of them also extending to New Zealand and temperate South America.

2. *Botanical Features and Relations of the Australian Flora.*

The Australian flora is so remarkable and instructive, and has been the subject of such a philosophical treatise by one of the first of living botanists,[1] that no apology is needed for the introduction of a popular account of its more interesting features into a geographical manual.

The flora of Australia, taken as a whole, is distinguished by several peculiarities. Thus, it contains more genera and species peculiar to itself, and fewer plants belonging to other parts of the world, than any other country of equal extent. Many Australian plants have a peculiar habit or physiognomy, giving in some cases a peculiar character to its forest scenery, such as the Eucalypti, the Proteaceæ, the Casuarinæ, as well as the Grass-trees, the Banksias, and many others. A great many species possess anomalous organs, as the pitchers of Cephalotus, the deciduous bark and remarkable vertical leaves of Eucalyptus; the phyllodia, or dilated petioles, which take the place of leaves in many Australian species of Acacia; the ragged foliage of many Proteaceæ, etc. Yet, notwithstanding these marks of specialty, the proportions of the great botanical subdivisions to each other is the same as in other parts of the world; there are no widely distributed orders absent from Australia, and there is no Australian order (with two small exceptions) that is not found also in other parts of the world. It is also to be noted that even the most characteristic types of Australian vegetation are closely allied to other groups which are widely spread over the globe. Thus the Australian Epacrises are allied to the heaths, the Goodeniaceæ to the Campanulas, and the Casuarineæ to the Myricaceæ. It

[1] *On the Flora of Australia; its Origin, Affinities, and Distribution: being an Introductory Essay to the Flora of Tasmania.* By Joseph Dalton Hooker, M.D., F.R.S., L.S., and G.S. London: Lovell, Reeve, and Co. 1859.

follows, that although the Australian flora is highly peculiar, it is not a peculiarity which implies a distinct origin, but merely a great isolation from the rest of the world. About 8000 species of flowering plants have been discovered in Australia; and it is now so well known that probably not more than 2000 remain to be discovered, making a total of 10,000 species. This is a greater number than are contained in all Europe, which is so much more varied in climate and aspect, while the surface of fertile ground clothed with a varied vegetation in Australia is hardly more than a fifth of the similarly clothed surface of Europe.

Contrary to what we might expect to be the case, this enormous variety of plants is due to the richness of the temperate rather than the tropical parts of the country. The temperate flora is estimated by Dr. Hooker at 5800 species; the tropical at only 2200; and the results of recent explorations seem to show that there is a much greater probability of making additions to the former than to the latter. The tropical flora, too, is far less peculiar, being characterised by the addition of certain Indian, Malayan, and Polynesian groups to a portion of the temperate Australian flora.

The peculiar vegetation of Australia is thus wholly extra-tropical, and is confined to the belt of fertile and mountainous land surrounding the desert interior on the south, east, and west. Two-fifths of its genera, and no less than seven-eighths of its species, are altogether confined to it; yet no less than 200 of the genera are found also in Europe.

The most remarkable feature of the temperate Australian flora is the great difference between its eastern and western portions; and, what is more remarkable still, Western Australia, which is much poorer in soil, has less extensive and less lofty mountains, and a much smaller

area of fertile land, yet actually possesses a richer flora than Eastern Australia. The south-western flora consists of 3600 species; the south-eastern flora (including that of Tasmania), of only 3000 species; and of these numbers only about 300 are common to both. It is to be observed that it is in the number of *species* that the south-western flora is so much superior; in the number of distinct genera and natural orders represented, the south-eastern has the advantage. The large genera common to both sides of the continent are remarkably distinct, not a single species of Acacia, Melaleuca, or Eucalyptus being common to the two, although these three genera comprise more than 450 species.

The difference between these two floras is also very remarkable, if we consider genera instead of species. There are about 180 genera in the west, which are either absent or represented by very few species in the east; yet these 180 genera include nearly 1100 species. No less than 17 large genera are entirely peculiar to the west, while such a characteristic Australian genus as *Epacris* is altogether absent. In order to make up the greater number of species with a smaller number of genera, we find that the West Australian genera have, on the average, more species than those of the east; the former having 17 genera, with 30 species and upwards in each; the latter only 11. Many of the species of Western Australia have a wonderfully restricted range, so that Swan River and King George's Sound, only 200 miles apart, and with continuous land between, are much more distinct in their plants than Tasmania and Victoria, separated by a wide arm of the sea. It is to be noted, too, that this Western Australian flora is purely Australian, having no intermixture of those European, Antarctic, or Malayan types which abound in the flora of East Australia. South Australia occupies an intermediate zone, and

appears to have received its rather poor flora by migration from both the east and west. It possesses hardly any special features, and is therefore of little importance.

The wonderful assemblage of plants so peculiarly Australian in character, and so abundant in genera and species, crowded together in the south-western extremity of the continent, on a comparatively narrow tract of land between the interior deserts and the sea, offers a difficult problem to the naturalist. It is evidently not derived from any other existing country, and it is equally clear that it must have been developed in some wider and more varied area than that in which it now exists; where, indeed, it has all the appearance of the remnant of an even richer flora compressed within narrow limits, since the rarity and limited range of many of its component species are usually held to be the precursors of extinction. Dr. Hooker suggests, as a pure speculation, that the antecedents of the peculiar Australian flora may have inhabited an area to the westward of the present Australian continent, and that the curious analogies which the latter presents with the South African flora may be connected with such a prior state of things. When treating of the geological history of Australia, we shall give some reasons for believing that we have, in this suggestion, a clue to the solution of the problem.

3. *The external Relations of the Australian Flora.*

The most interesting external relations of the Australian temperate flora, are, with the Antarctic islands, with South Africa, and with Europe.

There are about a dozen genera of plants, especially characteristic of Antarctic lands (including in that term all the islands south of New Zealand, and America south of Chili) which are also found in the mountains of South-

Eastern Australia; while there are more than twenty species common to these two districts. There is, however, nothing to show whether these were originally Australian or Antarctic plants, or in what direction the migration has taken place.

The South African flora is as distinct from that of tropical Africa as the temperate Australian is from that of Malaya and India: any resemblance between these two widely-separated south-temperate floras is therefore of great interest. The resemblance consists, first, in the prevalence of certain types of plants,—as terrestrial Orchideæ, Droseraceæ, Liliaceæ, Capparideæ, etc.,—but this may be due to a similarity of climate and physical conditions. More important is the occurrence of certain families and genera which are found nowhere else. Thus the two families Proteaceæ and Restiaceæ are abundant in both countries, but have only a few straggling species in any other part of the world. There are also five genera which are strictly limited to these two regions, and ten more, common to these and the Antarctic lands, but not found elsewhere. Again, some groups of one country are closely represented by allied forms in the other; the true heaths (Ericeæ) swarming in South Africa, and their close allies the Epacrideæ being almost equally abundant in Australia and the immediately adjacent lands. These undoubted affinities between the two floras are the more remarkable because their radical distinctness is no less certain. There are sixteen natural orders in each which are altogether wanting in the other. Myrtles, which include the Eucalypti, are exceedingly abundant in Australia, but very rare in South Africa; while Geraniums, Oxalises, Crassulas, and Asclepiads abound in South Africa, but are rare in Australia. The aspect of the two floras is also very different; succulent plants—such as Crassulaceæ, Mesembryaceæ, Aloes, and Euphorbiaceæ—giving a special

character to the Cape flora, but being almost entirely absent from Australia, where, on the other hand, Coniferæ and lofty forest-trees with evergreen foliage abound to an extent unknown in South Africa. We have here evidently two radically distinct temperate floras, between which some small amount of interchange has taken place at a remote epoch.

The European element in the Australian flora is far more prominent than either of the preceding, and is perhaps more difficult to account for. Dr. Hooker gives a list of thirty-seven species of British plants, all especially characteristic of Northern Europe and Asia and quite unknown in the tropics, yet inhabiting Australia, mostly on the mountains at considerable elevations, and therefore not at all likely to have been introduced. Besides these, more than fifty European *genera* are represented in Australia by allied species. On the other hand, the existing European flora does not contain one Australian species or representative, or betray the most remote direct botanical affinity with the Australian. There are, however, a few Australian forms in China, the Philippines, and Java, and a remarkable small group of Australian types on the summit of Kinibalou, the highest mountain in Borneo. These may perhaps be the remnants of a once wide-spread type of vegetation, for we have good evidence that groups of plants now peculiar to Australia formerly inhabited Europe. In the rich Miocene deposits of Switzerland, Professor Heer has discovered a number of Australian genera, such as Banksia, Grevillea, Hakea, and Dryandra, all belonging to the Proteaceæ; together with others resembling Leptomeria, Pimelea, and Eucalyptus. Fossil wood belonging to a Banksia has also been found in the Eocene deposits of Staines near Windsor; and as in several cases the fruits have been found and the foliage has the same microscopical structure as that of

living Australian species, there seems no reason to doubt that some of the most characteristic Australian groups of plants were then found also in Europe, and probably in the intervening regions.

The high antiquity of the Australian flora is proved by its great amount of generic and ordinal peculiarity. A genus is rendered peculiar by the extinction of the intermediate species connecting it with other genera, and when many genera are very peculiar the extinction must have been proportionally great. There must thus have been an extraordinary destruction of the species which once linked the Australian flora with that of the rest of the globe; and as such extinction is mainly due to geological and geographical changes, which are slow in operation, it follows that the isolated Australian flora must be a very ancient one. But the flora is not only very isolated but also very rich, and as highly organised as any on the globe. But a rich and highly organised flora or fauna must (on the evolution hypothesis) have required a very large area for its development, and we must therefore (Dr. Hooker thinks) assume not only the antiquity of the Australian flora, but that it was developed in a much larger area than it now occupies. The same author concludes, from his study of the whole subject, that the European and Australian floras are essentially distinct, and not united by those of intervening countries, though fragments of the former are associated with the latter in the Southern Hemisphere. There are many bonds of affinity between the three southern floras, the Antarctic, Australian, and South African; and these may all have been members of one great vegetation which may once have covered as large a southern area as the European now does a northern. When this great southern flora originated, or where it acquired its maximum development, it is vain to speculate; but the geographical changes

that have resulted in its dismemberment into isolated groups scattered over the Southern Ocean, must have been great indeed.

The Animal Life of Australia.

4. *General Features of Australian Zoology.*

The animal kingdom as developed in Australia presents us with anomalies and peculiarities perhaps even more remarkable than are exhibited by the plants; but owing to the great difference in the powers of dispersal of the various animal groups, there is less uniformity in the phenomena they present. Judged by its highest group—the mammalia—Australia is by far the poorest and the most extremely isolated of all the continents, and this class affords us the most certain proofs that no part of the country has been united to the Asiatic continent since the latter part of the Mesozoic period of geology. Every one of the most characteristic and wide-spread groups of the entire Northern Hemisphere are here wanting. There are no apes or monkeys; no oxen, antelopes, or deer; no elephants, rhinoceroses, or pigs; no cats, wolves, or bears; none even of the smaller civets or weasels; no hedgehogs or shrews; no hares, squirrels, porcupines, or dormice. The only representatives of all these familiar groups, or of the orders to which they belong, are a number of peculiar species of rats and mice—all small; and the "dingo," a half-wild dog, which, although found in a semi-fossil state in some of the caves, was almost certainly introduced by or with the earliest human inhabitants. Yet there are a considerable variety of mammals indigenous to the country, but they are all so peculiarly Australian as to belong to distinct sub-classes—the Marsupials and the Monotremes, of which the only representatives in any other parts of the world are the opossums of America. These

marsupials, or pouched animals, offer many peculiarities of organisation and habits; and the strange forms and motions of the kangaroos and wallabies, their erect attitudes, short fore-legs, and enormous powers of leaping, give perhaps its most special character to the animal life of this continent.

None of the other classes of animals afford such a peculiar and isolated set of types. The majority of the birds, which are abundant and varied, do not materially differ from those of the other continents, though there are a number of interesting and some exceptional forms; such as the mound-builders, which do not incubate their eggs, and are perhaps as low a type as the marsupials. Reptiles, fishes, and insects offer a still smaller number of peculiarities, though each afford some isolated and remarkable forms which will be noticed under their several classes.

5. *Mammalia.*

Australia, with Tasmania, possesses about 160 species of mammalia. This is very much less than the numbers inhabiting either Europe or North America; yet, considering the much smaller area, the less diversity of surface and of climate, the isolation from all adjacent lands, and the limited amount of structural variation in the animals themselves, it must be considered as exhibiting an extraordinarily rich development. Of the above number twenty-three are bats, a group which, having the power of flight, agree with birds rather than with mammals in their relations with the species of surrounding countries. The bats of Australia belong, in fact, to groups either of world-wide distribution, or which, at all events, extend to India or Africa. The large fruit-eating bat, or flying-fox, a species of Pteropus, is the most remarkable. It is found in New South Wales and Queensland.

There are no less than thirty-one species belonging to the Muridæ or mouse family. Some of these are true mice, closely allied to such as are found with us; others belong to distinct genera confined to Australia. Some live in trees, others are aquatic; but they are all rather small, and to an ordinary observer do not differ from such types of rats and mice as are found in Europe and Asia. In connection with the theory that Australia has never been joined to the Asiatic continent or any of its larger islands during the whole Tertiary epoch, it is a most suggestive fact that the only indigenous terrestrial mammalia allied to Old World forms should consist of these very small creatures, which, of all others, are most likely to have been conveyed to its shores by accidental causes. When floods devastate the banks of tropical rivers, and carry out to sea uprooted trees and islands of floating vegetation, some of these very small mammals might find protection in holes and crevices which would not suffice to shelter larger animals, and might thus be sometimes floated to distant lands. Those which established themselves at a remote epoch have become modified in their new abode, and now form distinct generic groups; while the more recent arrivals are closely allied to the species of other lands. The "dingo" or native dog, has already been referred to as probably not truly indigenous. It is, in fact, difficult to understand how such an animal could, without assistance, have arrived in the country except by means which would have equally admitted the entrance of many other animals. It differs very little from the wild or half-wild dogs of India and other countries, and this is an indication that it is, geologically speaking, a recent immigrant; and there is no improbability in the supposition that the entrance of man into the country dates as far back as the cave-deposits in which its bones have been found. The shores of Australia are inhabited by several

species of seals and sea-lions allied to those of the other Antarctic lands, while on the warmer coasts of Queensland is found the sea-cow or dugong (*Halicore australis*), allied to the animal found in the Indian seas, but believed to be a distinct species.

KANGAROO.

We now come to the Marsupialia, which are so especially characteristic of Australia. These are distinguished from all other mammals by the young being born in an excessively imperfect state, and then transferred to a pouch, or bag of loose skin, with which the mother is provided. Here it attaches its mouth to the nipple, and

completes its development. As the young creature grows the pouch is extended, and even when it can run about and feed itself, it still returns to the pouch for concealment or protection. This pouch is supported internally by bony processes termed the marsupial bones, and there are several other anatomical peculiarities by which the remains of marsupials of either sex can usually be distinguished.

The largest and most remarkable marsupials now living are the kangaroos, forming the family Macropodidæ, of which about nine large and more than forty smaller species inhabit Australia. The great red kangaroo is five feet high, and sometimes weighs two hundred pounds. The smaller species are called wallabies, hare-kangaroos, and rat-kangaroos; and some of these abound in every part of the country. The larger kangaroos are hunted with dogs bred for the purpose. They are very swift, and, when at bay, dangerous; sitting upright against the trunk of a tree, and ripping open the dogs as they spring at its throat with the nail of the large and powerful middle toe.

The Peramelidæ, or bandicoots and rabbit-rats, are small animals with sharp nose and long claws, allied to the kangaroos, but running on all fours like most quadrupeds. One genus, Peragalea, is called the rabbit-rat, because it forms burrows underground. Another peculiar form, the Chœropus, or pig-footed bandicoot, is entirely tailless. In this family the marsupial pouch opens downward, instead of upwards as in the kangaroos. They all feed upon bulbs and roots.

The Phalangistæ, or phalangers, are arboreal and nocturnal animals, feeding on leaves. They are commonly called opossums in Australia, but are quite distinct from the true opossums of America. They live in hollow trees, and are very active on moonlight nights. They constitute a favourite food of the natives, and their skins form the

"opossum" rugs now an article of commerce. Some of the species are as large as a hare, while others are not larger than a dormouse, one indeed being even smaller. Allied to these are the beautiful flying-opossums, which have a lateral membrane between the fore and hind limbs, and a flat tail with diverging hairs, exactly as in the flying squirrels of Asia, which they greatly resemble. The largest species, which is nearly black, measures almost three feet in length to the tip of the tail, and presents a startling appearance to the stranger who sees it for the first time, by moonlight, pass silently through the air in the stillness of the forest. Other species are smaller, the flying-mouse of the colonists being one of the smallest of Australian quadrupeds, and able to sleep comfortably in a good-sized pill-box. It frequents the blossoms of the Eucalypti, feeding on the honey. Allied to the other phalangers, but very distinct in form and habits, are the Tarsipes of West Australia and the Koala of the eastern districts. The former is a true honeysucker with an extensile tongue, and is no larger than a mouse; while the latter is a comparatively large and thick-limbed animal, entirely tailless, and about two feet long. It forms the genus Phascolarctos, and is called by the colonists "native bear" or "native monkey."

The Phascolomys, or wombat, is another large and thick-limbed animal, about three feet long, and, next to the kangaroos, the largest of the marsupials. It is terrestrial and nocturnal, feeding upon roots and grass, and forming deep burrows. It is slow in its movements, and its flesh is said to resemble pork. It has powerful gnawing and grinding teeth, and it possesses two more pairs of ribs than any other marsupial. It therefore constitutes a distinct family of the order.

We now come to the Dasyuridæ, or "native cats," which are carnivorous marsupials preying upon the other

groups. These are elegant creatures, variously marked and spotted, but fierce and intractable. They dwell among rocks and in holes, and feed chiefly on small mammals and birds. These larger species form the genus Dasyurus; but the genera Phasgogale and Antechinus are no bigger than rats and mice, and feed probably on insects and molluscs. Somewhat allied to these is the rare and curious banded ant-eater of Western Australia (*Myrmecobius fasciatus*). It is the size of a squirrel, beautifully banded with white stripes, and with a long and somewhat bushy tail. It has fifty-two teeth, a greater number than any known quadruped, and is believed to feed chiefly on the ants which abound where it lives. It is probably a representative of one of the most ancient types of mammal, since, more nearly than any other living animal, it resembles some of the marsupials of the Secondary period, especially the Microlestes from the Trias of Wurtemburg. Two much larger and more destructive Dasyuridæ inhabit Tasmania—the Thylacinus, or "tiger-wolf," and the Sarcophilus, or "native devil." The former is the size of a wolf, the latter somewhat smaller. Both are ferocious and untameable, and very destructive to sheep. Though now confined to Tasmania, their remains are found fossil in the caves of New South Wales, showing that they inhabited the mainland of Australia at a not very distant epoch.

We now come to the lowest group of mammals—the sub-class Ornithodelphia or Monotremata, consisting of two of the most remarkable animals on the globe, the duck-billed Platypus, and the Echidna or spiny ant-eater. These differ from all other groups of mammalia anatomically, and are the lowest in organisation. They have no teeth, nor a marsupial pouch, but they have the peculiar bones characteristic of marsupials. They were long believed not to be true mammals, but to be more allied to

birds; but this is now known to be incorrect, as they really suckle their young. The Platypus, or water-mole of the colonists, is about twenty inches long, has very short legs with broad webbed feet, and a flat head, from which project two flat horny jaws almost exactly resembling the bill of a duck, but not laminated, and the upper jaw has a broad membranous border. It is covered with thick brown fur, and inhabits the rivers and lagoons of the south and east of Australia as well as Tasmania. It makes burrows in the river-banks, sometimes forty or fifty feet long, in the extremity of which it forms a nest. The Echidna, or porcupine ant-eater, somewhat resembles a hedgehog in size and appearance, but it has a long snout, and a long cylindrical and flexible tongue, like that of the true ant-eaters, covered also with a viscous secretion, and used in the same way for capturing the ants on which it feeds. It rolls itself in a ball like the hedgehog. It is found in sandy and sterile districts. Two closely-allied species are known; the one inhabiting South and East Australia, the other Tasmania.

6. *Birds.*

Among the temperate countries of the world, Australia stands unrivalled for the variety of form, the beauty of plumage, and the singularity of habits of its birds. Its parrots and cockatoos are more numerous and beautiful than those of many tropical countries. The golden-yellow and velvety-black regent-bird, and the intensely vivid metallic plumage of the rifle-birds, are almost unrivalled; many of the pigeons are exquisitely beautiful; while some of the warblers and fly-catchers, the curious little Maluri or Australian wrens, and many of the finches, are unsurpassed for beautiful combinations of vivid colour. The strange yet elegant tail of the lyre-bird is altogether

unique; while the curious habits of the brush-turkeys and the bower-birds are equally remarkable.

Taking the Australian birds as a whole, there is little of that marvellous isolation from the other continents that is so prominent a feature of the mammalia. All the chief orders, and most of the important and wide-spread families, are well represented; yet there are certain deficiencies of great importance. Two great families which range over almost all the rest of the globe—the vultures and the woodpeckers—are quite unknown in Australia. The pheasants are also wanting, as well as two families excessively abundant in tropical Asia—the bulbuls and the barbets. But these deficiencies are more than compensated by the presence of a number of families which are altogether peculiar to Australia and the surrounding islands. These are the Meliphagidæ, or honeysuckers; the Platycercidæ, or broad-tailed parroquets; the Trichoglossidæ, or brush-tongued lories; the Megapodiidæ, or brush-turkeys; and two small families, the Menuridæ or lyre-birds, and the Atrichidæ or scrub-birds.

Australia is pre-eminently a land of flowers; its largest forest-trees—the Eucalypti—having blossoms like a myrtle, while the flowering shrubs are innumerable. No less remarkable is the paucity of soft and juicy fruits: and, in accordance with these peculiarities, we find that an extensive and varied family of birds have been developed, which frequent blossoms almost as constantly as do the humming-birds of America, and for the same purpose—to feed upon the secreted honey and the small insects attracted to it. Their organisation is, however, totally unlike that of the humming-birds, the Meliphagidæ having a brush-tipped tongue, and exceedingly powerful grasping feet, with which they cling to the flowers while rifling them of their sweets. Being thus specially adapted to its flora, we may consider the honeysuckers as the

birds which more than any others characterise Australia. A group of honey-sucking parrots—the Trichoglossidæ, or brush-tongued parroquets—are also peculiar to the Australian region, but abound more in the tropical islands, from the Moluccas to the Pacific.

Next to these, as a special Australian type (or even before them, as some may think), come the brush-turkeys or mound-makers—birds of low organisation, and allied, though remotely, to the curassows of South America. There are three species of these birds in Australia, the Talegalla or brush-turkey, the Leipoa or scrub-pheasant, and the Megapodius, which is only found in the tropical parts of the continent. All these birds have the curious reptilian character of never sitting on their eggs, which they bury under mounds of earth or refuse vegetable matter, allowing them to be hatched by the heat of the sun, or that produced by fermentation. Their eggs are enormously large in proportion to the size of the bird, and are laid at intervals of several days.

The parrots of Australia are wonderfully varied and very beautiful. There are white, and rose-crested, and black cockatoos; gorgeous broad-tails; pretty lories, and elegant grass-parroquets and love-birds. The pigeons are hardly less beautiful; the green fruit-doves, the bronze-wings, the crested pigeon, and the "magnificent" fruit-pigeon, being the most notable. The emu and the cassowary are the well-known Australian representatives of the ostrich tribe. The kingfishers are of strange forms or brilliant colours; while the enormous mouths of the Podargi, called "more-porks" from their singular cry, render them one of the strangest and most unsightly of birds. Song-birds, too, are not wanting. There are many musical warblers equal to our own favourite songsters; while the wonderfully modulated whistle of the piping-crow or musical magpie, and the mocking notes of the

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lyre-bird, are unequalled among European birds. Not less remarkable on account of their habits are the satin-birds or bower-birds, which construct bower-like structures of twigs and branches, and decorate them with coloured feathers, bones, and shells. Some of these bowers are several feet long, arched over at the top, and are the resort of many individuals, both males and females, which run in and out as if for amusement.

If we consider the limited area of Australia, the great extent of its desert interior, and its isolation from all the great continents, the abundance and variety of its bird-life are very remarkable. It possesses about 630 distinct species of birds; whereas Europe, with a much larger area, has less than 500; and North America, with its enormous area and its immense accessions of migratory birds from the arctic regions and from the tropics, has only 720. Of the land-birds of Australia, not more than one-twentieth are found elsewhere—an amount of specialty not equalled by any other continent or extensive tract of country.

7. *Reptiles, Fishes, and Insects.*

These groups of animals, being less generally interesting, may be more briefly noticed. Reptiles are very abundant in Australia, there being no less than 140 different kinds of lizards, and between 60 and 70 snakes. The largest lizard is one of the monitors, which reaches a length of from four to six feet. Most of them belong to the Old World families of the skincs and geckoes, but there are three small families which are peculiar. The lizards of West Australia are very peculiar, no less than twelve genera being restricted to this colony with South Australia, while Victoria and the eastern colonies have

a much less number of special types. In this respect lizards agree with plants.

Snakes are very abundant in individuals, and there are a large number of venomous species. The two chief poisonous families of the rest of the globe, the vipers (Viperidæ) and the pit-vipers (Crotalidæ) are entirely absent, their place being supplied by the Elapidæ, a family which includes the Indian cobras, but which have not the broad venomous-looking head of the vipers. Two-thirds of the Australian snakes belong to this family, and all are poisonous, though only about five are believed to be fatal to man. The number of species of snakes increases regularly from the temperate to the tropical districts. In Tasmania there are only three species, all of which are poisonous; in Victoria there are twelve; in South Australia fifteen; the same number in West Australia; thirty-one in New South Wales; and forty-two in sub-tropical Queensland. The diamond snake, one of the boa family, reaches twelve feet long, but is quite harmless. The black snake, one of the commonest and most venomous species, is from five to eight feet long. There are many species of small sea-snakes on the warmer coasts, which have flattened tails, and are all very venomous.

Australia possesses a large number of frogs and toads, belonging to nine distinct families; but there are no tailed Amphibia corresponding to the newts and salamanders of northern countries. The freshwater fish of Australia are tolerably plentiful, considering the paucity of large and permanent streams. The extensive carp and salmon tribes are absent, but ten families found in other warm and temperate countries are represented. The most remarkable of the Australian fishes is the Ceratodus, recently discovered in the rivers of Queensland. It is allied to the Lepidosiren of tropical America and the Protopterus of tropical Africa, the three constituting a

distinct sub-class, the Dipnoi, an exceedingly ancient type, as shown by fossil remains, closely allied to the living Australian fish, which are found in the Triassic formation.

Insects, as a whole, are abundant, and are both handsome and remarkable; yet the most conspicuous group, the butterflies, are very scarce in the temperate parts, and only become tolerably abundant as we approach the tropics. Tasmania and the southern colonies of Australia are, in fact, not so rich in butterflies as Great Britain. Beetles, on the other hand, are very abundant and varied, and many of them are exceedingly brilliant. Those belonging to the family Buprestidæ are not surpassed in any other temperate country for numbers and beauty. The Mantidæ or praying-insects, and the Phasmidæ or walking-stick insects, are also very abundant; and some of the latter are of enormous size, being over a foot long, and curiously knobbed or spined so as to resemble dead sticks.

About 300 distinct kinds of land shells inhabit Australia, and many of them are curiously shaped or elegantly coloured.

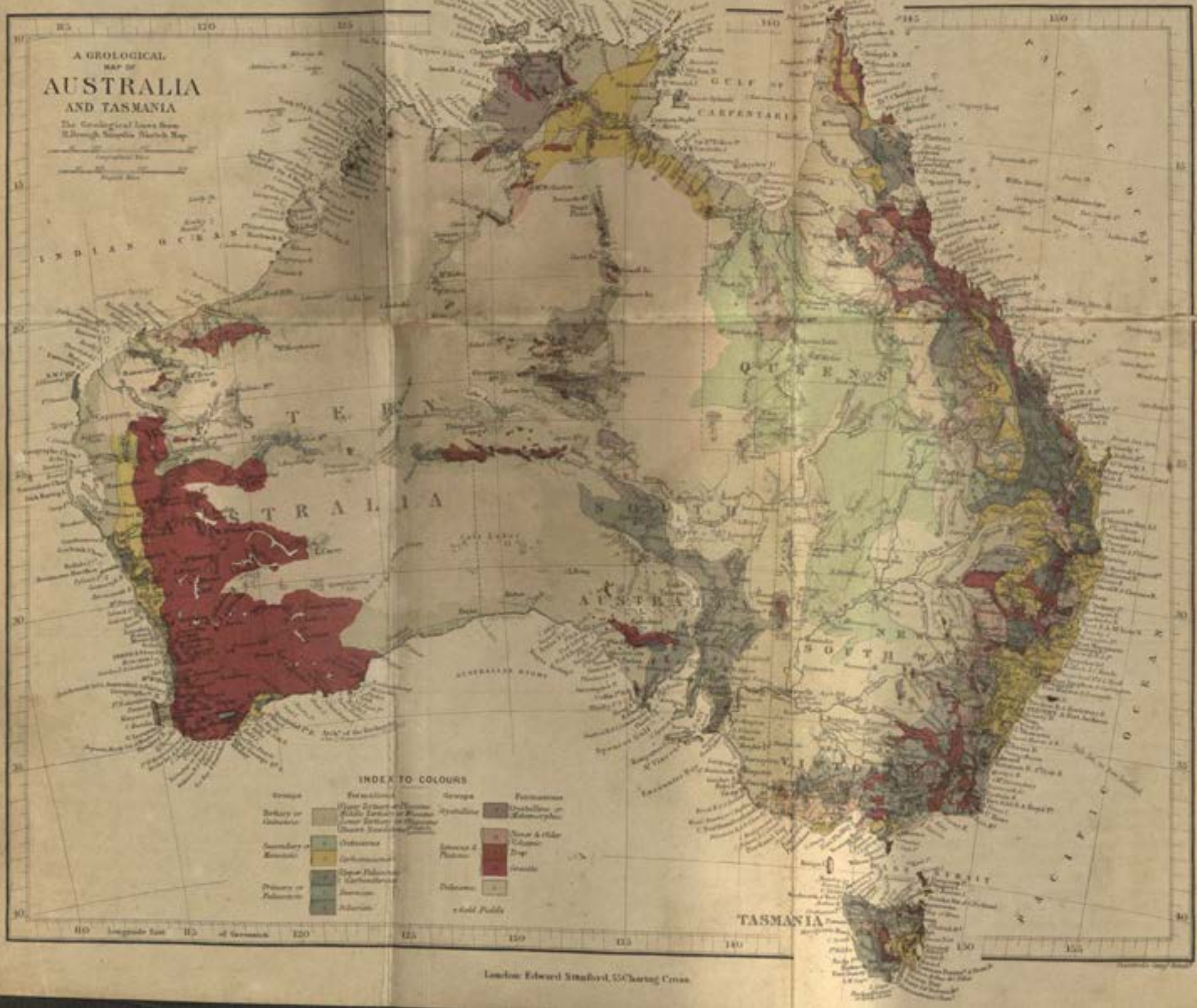
CHAPTER IV.

THE GEOLOGY AND PAST HISTORY OF AUSTRALIA.

1. *General Considerations.*

OWING to the energetic researches of the various colonial geologists, many of the details of the geology of Australia have now been worked out, and we are able to form a tolerable notion of the past history of the country. Reserving some details to be noticed when describing the several colonies, we shall here give a brief sketch of the chief classes of rocks, and the light they throw upon the present condition of the land and the more important changes through which it has passed.

For a long time it was believed that no Secondary formations existed in Australia, which was thought to consist wholly of very old and very new deposits; the inference being that during the whole of the Mesozoic or Secondary period the country was above the sea, and that no elevations and subsidences of importance occurred throughout that enormous lapse of time. This is now known to be erroneous; and Australia, in this respect, offers no exception to other parts of the world, although the amount of Secondary rocks visible on the present land surface is somewhat small. We will now give an outline of the distribution of each of the great classes of rocks—Palæozoic or primary, Mesozoic or secondary, and Cainozoic or tertiary, as well as of the most recent quaternary or Post-pliocene deposits.



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2. *Palæozoic Formations.*

These ancient deposits constitute what are now the chief mountain ranges of the greater part of Australia. The Blue Mountains of New South Wales, the Australian Alps, the great Dividing Range of Victoria, as well as the Pyrenees and Grampians in the south-west, consist mainly of Silurian deposits of two periods, the lower or more ancient, and the upper or more recent. Granite, syenite, and porphyry also abound, often constituting the highest summits; but these are all intrusive igneous rocks, and are believed to be of much later date. They probably correspond to the period of elevation of the Silurian beds, not to that of their deposition. In South Australia the same rocks form the mountainous back-bone of the colony, extending far into the interior. Similar rocks constitute the dividing ranges of Queensland; and rocks of the same age, though of different character, are believed to constitute the high table-lands and mountains of the north. When we come to the west coast, however, we find the Palæozoic rocks far less developed, though they occur in the Darling range and near Champion Bay. Here the mountains are much less lofty and less extensive, and the older rocks are more concealed by recent deposits; while inland there is an extensive area of granitic rocks, forming isolated hills and peaks in a mostly desert country.

In Queensland the carboniferous formation is very largely developed, extending 200 miles inland between latitudes 29° and 15° south, and covering an area of more than 50,000 square miles; and in some places the deposits of this age are thousands of feet thick. Fine coal occurs here as well as in the later Mesozoic formation. Sandstones and limestones belonging to the carboniferous or permian formations also occur in the south-eastern district of Victoria. All the older settlements of

New South Wales are situated on a sandstone deposit which contains the coal-field of the Hunter River. This has been sometimes classed as a Secondary formation, but is now believed to be Palæozoic, and to correspond with the true coal of Europe. No carboniferous rocks are known to occur in South or West Australia. The tin mines of Queensland are in granite, which rises through the carboniferous rocks, and which may be of a much later age.

3. *Mesozoic Formations.*

Mesozoic deposits have now been discovered in numerous localities, most abundantly in Queensland, less plentifully in New South Wales and Victoria. The two southern peninsulas of Victoria consist largely of limestones and coal-bearing beds of Mesozoic age, but coal has not yet been found in large quantities. The Wannon valley, a tributary of the Glenelg in West Victoria, is another region of Secondary rocks, which altogether occupy an area of about 4000 square miles in this colony. In New South Wales the extensive sandstone deposits to the east of the Blue Mountains are, as above mentioned, sometimes classed as Mesozoic. Trias occurs at the Clarence River in the north, and there is a coal deposit at Paramatta, near Sydney, of Mesozoic age. In Queensland much of the interior, west of the Dividing Range, appears to be of Secondary age and to belong to the Oolitic formation, which includes the southern coalfield. In the north and north-west of this colony, extending almost to the Gulf of Carpentaria, and southward to beyond the Darling, is an extensive area of cretaceous beds, said to occupy about 200,000 square miles, or about one-third of the entire colony.

These various formations have been determined by means of fossils corresponding to those of other parts of

the globe. The Silurian fossils are similar to those of Europe and North America. The carboniferous formation contains fish, corals, and zoophytes, allied to those of the same period in Europe, while the coal produces such familiar plant-forms as Sigillaria, Calamites, and Lepidodendron. In these older deposits some of the species appear to be the same as those of Europe, but in later times, as might be expected, greater differences appear. The cretaceous rocks are, however, clearly defined by Belemnites and Ammonites, and by remains of huge Plesiosauri and Ichthyosauri of peculiar species.

4. *Tertiary Formations.*

Tertiary deposits, often of uncertain age, but supposed to be mostly Pliocene, occupy an enormous area in all parts of Australia, constituting what are termed the desert-sandstone, the coral-limestone, and much of the gravels, conglomerates, and clays of the gold-diggings. The desert-sandstone covers a considerable part of Western Australia; stretches across the interior, where it forms the castellated sandstone hills; occupies all the interior of South Australia, except where interrupted by the Primary ranges and volcanic hills; and extends over the interior plains of Victoria, New South Wales, and much of Queensland. Hardly any of the older Tertiary deposits have been met with. In Victoria there are a few beds supposed to be of Miocene age to the west of Geelong and near Cape Otway. The Portland sandstone in the extreme west of the colony, and the rough limestone of Gipps Land in the east, may also belong to this period. Some portion of the Murray district in South Australia also seems to be Miocene.

It is an interesting fact that no *marine* Tertiary deposit has been discovered in the whole of New South

Wales and Queensland, while many such occur in the south and west, reaching in Victoria a height of 600 feet above the sea. Numerous plant-beds have, however, been found in the deepest sinkings for gold. Thus, at Haddon, in the Ballarat district, numerous fossil fruits were found at 150 feet deep in the lowest auriferous deposit. These fruits all belong to extinct genera, but are allied to Australian plants of a sub-tropical character. Other deposits show species closely allied to those now living in the same localities. A deposit of black clay, full of leaf-remains, occurs at a height of 4000 feet in the Australian Alps, near the Kiandra gold-field.

5. *Quaternary or Post-Pliocene Deposits.*

Numerous superficial deposits of drifts and gravels which belong to the Quaternary period, occur in many parts of Australia. In the gold districts such deposits form "flats," and are always subsequent to the latest lava-flows. In the interior the cave-deposits of Wellington on the Upper Macquarrie River, and those of the Upper Murrumbidgee, belong to the same period. These, as well as superficial clay-deposits in the Liverpool Plains, Darling Downs, and many other localities, have yielded abundance of interesting fossils, which give us some knowledge of the past condition of the Australian fauna. The extinct species all resemble, in general character, those now living in Australia; but, as in most other countries, many of these recently extinct animals were of enormous size. One of the kangaroos was fully a third larger than any living species; while the Diprotodon, a huge, thick-limbed animal allied to the kangaroos, was nearly as large as an elephant. An extinct wombat (Phascolomys) was as large as a tapir; while the Nototherium, a creature intermediate between the wombat and kangaroo, equalled in

size the living rhinoceros. Besides these, forms of kangaroo have been found allied to the Dendrolagi or tree-kangaroos now confined to New Guinea; while the Thycaloleo was a huge phalanger as large as a lion, and supposed by Professor Owen to have been, like it, a beast of prey. The Thylacinus and Dasyurus, which now live only in Tasmania, were formerly inhabitants of Australia also. Remains have been discovered in several localities of a huge bird larger than an ostrich, but allied to the emus and cassowaries still inhabiting the country. It has been named by Professor Owen, Dromornis.

In the Lower Murray there are some basaltic rocks overlying the coral limestone, which are believed to have been produced by submarine volcanoes during this period.

6. *Extinct Volcanoes and their Products.*

Although there is no active volcano in any part of Australia, there are several districts where extinct volcanoes abound, and where they have played an important part in determining the character of the country, both as regards scenery, soil, and mining operations. Beginning at the south, the first important group of extinct volcanoes are those of Mount Gambir, in the southern extremity of the colony of South Australia, which have broken through the coral limestone, the beds of which are perfectly horizontal. The craters of these are now occupied by beautiful lakes, but they do not seem to have emitted any extensive lava-streams. In the colony of Victoria extinct volcanoes are very numerous, and this district appears to have been the seat of volcanic action from very early times, much of the plains on both sides of the mountain range being basaltic, the product of volcanoes of all periods from the Palæozoic to the Tertiary. In the neighbourhood of Ballarat extinct volcanoes may be counted by the score

from any commanding eminence. Some large cones rise from the level of the plains, and dozens are passed in journeying westward from Melbourne. Some of these are nearly closed at the summit, while others have a crater-rim of miles in extent. The craters are sometimes filled with water, and vary from a few feet to hundreds of feet in depth. Some of these craters are 2000 feet above the sea. Many of them were active during the Miocene and Pliocene periods, while some are believed to have continued in eruption almost down to historic times.

In New South Wales extinct volcanoes are far less numerous, and what there are seem to be less perfectly preserved. There were, however, many outflows of basalt during the Tertiary period.

In Queensland volcanic peaks reappear in the west and far towards the north, and numerous streams of lava can be traced from them.

7. *Geological Features of the Gold Mines.*

The extensive workings for gold have thrown so much light on the geological structure of Australia and on the changes which have occurred during the Tertiary period, and the formations in which the gold occurs are so interesting in themselves, that a somewhat fuller sketch of this portion of the subject will not be out of place. The following description applies more especially to the Ballarat district, but the features of many of the other gold-fields do not offer any material difference.

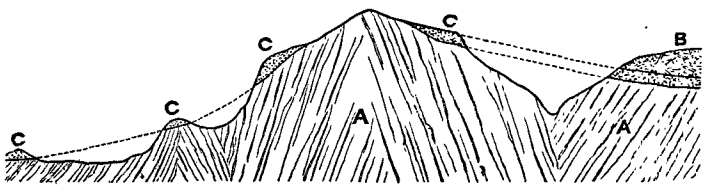
The Tertiary gold-drifts of Victoria belong to four well-defined epochs, which are classed as "oldest," "older," "recent," and "most recent," and they are believed to date from the older Pliocene period, although a few isolated patches occur which may be Miocene. These "drifts" all rest upon, or have been derived from, the

lower Silurian strata, which is termed the "bottom" "or bed-rock" by the miners, and contains the "reefs" or auriferous quartz veins whence all the gold of the "drifts" has been derived. These quartz-veins are now largely worked, the quartz being crushed and the gold extracted by washing and amalgamation. Quartz mines have been sunk to the enormous depth of 1500 and 2000 feet, the quartz yielding on an average about half an ounce of gold to the ton, sometimes rising to three and a half ounces. By far the greater number of miners are however still employed on the "drifts," which often lie at great depths. These have to be penetrated to the bottom, sometimes a depth of 200, 300, or even 500 feet, where the gold is found collected in *leads* or old river beds, called also "gutters." In penetrating to these "*deep leads*," beds of hard basaltic rock or ancient lava-flows of great thickness are often met with. These were at first thought to form the bottom of the drift, but it was soon discovered that by piercing through them the drift might be followed to the "bed rock," where alone any quantity of gold could be usually found. If the sinking did not happen to reach one of these *leads* or old water-courses, lateral exploration had to be made till it was found, when its course was followed with more or less success.

8. *The "Oldest" Drifts.*

The "oldest" drifts are those which antedate not only many of the existing valleys, but also those old watercourses now buried in drift, in which rich gold deposits are found, and which are termed "leads" by the miners. They consist of loose quartz gravel, sandy iron-stone, or even hard siliceous rock enclosing quartz pebbles. Isolated patches cap various points of considerable elevation on the opposite sides of the valleys of

the Silurian ranges, but never on the lower spurs of these ranges. Sometimes the drift is covered by a layer of basalt. It is often non-auriferous or only containing a mere trace of gold, but in a few localities near Ballarat it is very rich. It is believed to have spread over a large portion of the county, but to have been since removed by denudation. No fossils have been found in it, except a few remains of wood in too fragmentary a state for identification. It is believed by some geologists that the old drift must have been formed by marine action during a period of elevation of the mountain ranges above the sea. Under such conditions it is generally admitted that marine fossils would rarely be preserved. The accompanying illustration, taken from the Reports of the Geological Survey of Victoria, well illustrates the manner in which this formation occurs, and its relation to the existing outline of the country.



SKETCH SECTION ILLUSTRATING MODES OF OCCURRENCE OF THE "OLDEST DRIFT."

A A. Silurian rocks. B. Basalt. C C C C. Oldest Drift.

9. *The "Older" Drifts.*

Under this term are included the gutter-drifts, the volcanic lava-beds, and the drift deposits intervening between the latter. The gutter-drifts occupy well-defined channels in the Silurian bed-rock, more or less tortuous in their course, and with a steady fall towards the valley-bottom or the seaboard. This drift is heavy, consisting

principally of fragments of quartz, with hard slates and sandstones and some clay and sand. Numerous remains of vegetation occur in the gutter-drift. Large trunks of trees, branches, and fragments of wood, and, in some instances, trees *in situ*, their roots embedded in the ancient soil, and their upper portion enveloped in lava, are met with in the gold-workings.

Immediately above the gutter-drift comes the "fourth rock" of the miners, really the first lava-flow, which took its course along the principal valleys and ascended a short distance up their tributaries. It is confined to the deepest ground. Above it are various deposits of clay, sand, and gravel, separating it from the "third rock," or second lava-flow in point of time. Among these deposits ancient surface-soils with the remains of vegetation can sometimes be detected. This second lava-flow spreads rather more widely than the first, and is also covered by varying thicknesses of clay and drift. Next comes the "second rock," or third lava-flow, which covers a wider area than any of the others in Victoria. Over this come clays, and then we have the "first rock" or fourth and latest lava-flow, which forms the surface rock of the plateau west of Ballarat, but it does not extend far southward.

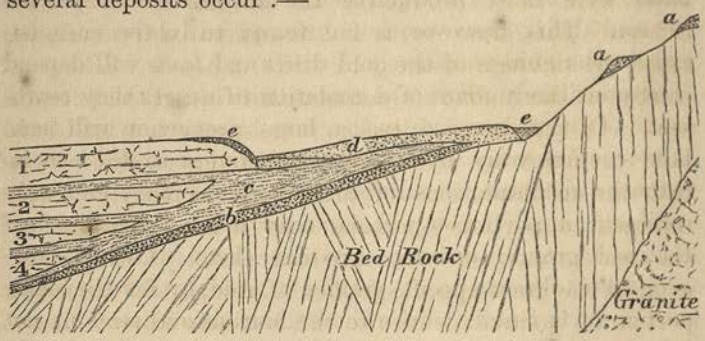
10. "*Recent*" *Drifts.*

Since the last lava-flow the formation of clays and gravels has gone on, and has been greatly aided by the surface waters having been in places dammed back by the lava. Many of the older deposits of drift have been denuded and redistributed in these more recent deposits, They form tolerably level flats, and sometimes cover the lower hills, the intervening valleys having since been emptied by denudation.

The "most recent" drift consists of lava, clay, and

gravel, occupying the beds of recently eroded gullies or forming surface-deposits over the lower portions of the older drifts, from the denudation of which it is principally derived.

The accompanying sketch-section shows how these several deposits occur :—



SECTION SHOWING THE VARIOUS DRIFTS AND LAVA-FLOWS.

aa. Oldest drift; *b*, gutter drift; *c*, older drift, covering successive lava-flows; *d*, recent drift; *ee*, most recent drift; 1,2,3,4, successive lava-flows. The "bed rock," is Lower Silurian, with granite sometimes intruding.

Gold is sometimes found in the few inches of surface soil and rubble overlying the Silurian rock on the slopes and spurs of the hills, especially in the vicinity of quartz veins. In other places a few scattered pebbles of quartz show that the drift which once was there has been removed by denudation, but the accompanying gold, from its superior weight, often remains in the crevices of the rock, or entangled among the roots of grass or trees. The thicker deposits at the foot of the hills and in the gullies intersected by auriferous quartz reefs, are often gold-bearing from surface to bottom. On mapping the *leads* which have been worked, it becomes evident that they represent a system of ancient watercourses. These correspond generally to existing valleys, but in many cases no indication of their position is to be detected by the contour of the surface.

11. *Quartz Reefs.*

The quartz reefs being the source of all the gold found in the drifts, it was natural to suppose that where the latter were most productive the former would be the richest. This, however, is not found to be the case, because the richness of the gold drifts and *leads* will depend chiefly on the amount of denudation of quartz they represent. Of the denuded rock a large proportion will have been carried away by streams and rivers to the sea, so that the accumulations of drift, large as they are, only represent a portion—perhaps only a small portion—of the rock ground down to produce them. Owing, however, to the great specific gravity of gold, by far the larger portion of it sinks at once to the bottom and remains not far from the parent rock; and even successive floods will not carry it away, but only cause additional deposits in the lower beds. Where the quartz reefs are numerous and have been subject to great denudation, a very rich deposit of drift may be formed, even though the quartz itself is very poor in gold.

12. *Probable Past History of Australia.*

Although much remains to be done in working out the details of Australian geology, yet sufficient is known to enable us to speculate with some confidence on the changes that must have occurred in its physical condition, to bring about the present state of things. The subject is of extreme interest on account of its connection with the striking peculiarities of vegetable and animal life—peculiarities which must be dependent on the long-continued isolation of Australia from the rest of the globe, and on its area having always been sufficiently large to support and develop a varied population of animals and

plants. Let us then endeavour to sketch out the probable history of Australia during successive geological epochs.

Palæozoic Epoch.—The great extent of Palæozoic sedimentary formations all round Australia, as well as in some parts of the interior, plainly tells us that at this period there must have been an extensive land area in the vicinity from whose denudation these rocks were deposited in the surrounding ocean. We have at present no evidence of the direction in which this land mainly lay; but the occurrence of extensive strata of the carboniferous age, with numerous coal beds, over a large area of the eastern side of Australia, would lead us to conclude that in this direction there was once a great continent, in whose inland lakes, seas, or estuaries, these plant-bearing deposits were formed.

Mesozoic or Secondary Epoch.—The granite and other igneous intrusive rocks piercing through or upheaving the Palæozoic beds in numerous localities, or forming isolated mountains in the interior, are probably of various ages, but are believed to date, for the most part, from the Mesozoic period. The character and position of the Secondary rocks in Australia is *prima facie* evidence of the existence at the period of their formation of a large extent of dry land, with adjacent seas and gulfs of no great depth; and this supposition agrees with the remarkable development of vegetable and animal life, whose differences from those of the other great continents are such as to imply isolation from them during a period dating back to some part of the Secondary epoch. The oolitic and cretaceous deposits of Queensland imply a considerable area of rather shallow sea in this direction, with abundant coral reefs. There may be, it is true, deposits of Secondary age buried under the Tertiary formations of the interior; but this is not probable, and even if it were the case, it would equally imply a considerable area of Second-

ary land to supply the sediments for such extensive deposits. At this time the early connection of Australia with the Asiatic continent had probably ceased; but the former country may have extended over what is now New Guinea and the Moluccas, as well as southward over Tasmania, and westward towards the Cape of Good Hope.

Kainozoic or Tertiary Epoch.—It is when we come to the Tertiary epoch that we obtain some more adequate notion of the condition of Australia in the immediate past. The abundant mammalian fauna, so completely isolated from that of all the rest of the globe, and the proofs that this fauna was once even richer without being less isolated than it is now, compel us to the conclusion that during a considerable portion of the Tertiary epoch a more extensive and more fertile continent occupied nearly the same geographical position as Australia does now. Every other department of nature presents analogous peculiarities, which equally force us to adopt this view; and it is supported by the fact of the absence from every part of Australia, yet explored, of any extensive marine deposits which can be certainly classed as belonging to the earliest Tertiary age (Eocene or Lower Miocene). This implies that during a vast period the greater part of what we now know as Australia was dry land, and there are indications that it also comprised lands which have since sunk beneath the ocean, or been carried away by its waves and currents. The highly peculiar flora of West Australia, so much richer than that of the eastern colonies, clearly implies a great extension here towards the west and south, so as to afford an area sufficiently extensive and varied for the development of so many special types, and also to explain that slight affinity with the Cape flora which is a marked feature of West Australian botany. The islands of St. Paul and Amsterdam may indicate where an inter-

vening land once formed a stepping-stone for the intermigration of the plants of Australia and South Africa.

Coming down to later Tertiary times (Pliocene), we find proofs of great subsidence and enormous denudation. A large area near the coast in South and West Australia consists of an arenaceous limestone, the *débris* of coral reefs of Pliocene age. The fossil corals found here are said by Dr. Duncan, who has specially studied them, to be mostly peculiar forms, some few being identical with European pliocene corals, and some with species now living in the China Sea, Red Sea, and Caribbean Sea, but none identical with living Australian corals. This implies a change of climate and of distribution of marine animals analogous to what has occurred in the Northern Hemisphere. A considerable expanse of country must, therefore, have sunk beneath the sea-level at this period, and have been subsequently raised again; but this depression does not appear to have extended far inland or to the eastward, where no marine Tertiary formations have ever been found.

13. *Origin of the Desert Sandstone.*

Another late Tertiary formation—the desert sandstone—is far more remarkable, and may, in fact, be termed the geological mystery of Australia. It is supposed to occupy one-third of the entire country, covering vast areas of the interior from the western plains of Queensland and New South Wales, right across the continent to West Australia. Owing to the absence of organic remains, except some imperfect plants and fresh-water shells, it is impossible to tell its age, or whether it is all of the same age; but it is generally considered to belong to some part of the later Tertiary or Pliocene period. In Northern Queensland it rests on chalk, and is, again, in parts covered by lava-

beds. It consists of extensive plains, plateaus, and low hills; the latter probably indicating the level it once attained all over the country, the intervening plains having been lowered by sub-aerial denudation. This is also shown by the numerous examples of isolated rock-pillars in many parts of the country. One of these, known as Chambers's Pillar, and situated nearly in the centre of Australia, is 150 feet high, and stands on a low hill about 100 feet above the plain. The pillar itself, which is about 10 feet by 20 in cross section and of nearly equal width from top to bottom, is of a soft white sandstone, as is the hill on which it stands. The upper part of the pillar is red, and it may owe its preservation to the somewhat greater hardness and durability of this upper layer. In the same neighbourhood are many other remarkable rocky hills, resembling old castles in ruins, standing on and among sandhills. The manner in which these pillars were probably formed is well illustrated by the observations of Captain Grey on a remarkable group of pillars found by him on an elevated table-land in the northern part of West Australia. Several acres of land were here covered with lofty isolated sandstone pillars of the most grotesque and fantastic shapes. In one place was a regular unroofed aisle, with a row of massive pillars on each side; and in another, there stood upon a pedestal what appeared to be the legs of an ancient statue, from which the body had disappeared. The height of some of these columns which were measured, were found to be upwards of forty feet; and as the tops of most of them were nearly at the same level, that of the surrounding country must at one period have been as high as their present summits, probably indeed, much higher. From the top of one of these pillars an extensive view was obtained showing everywhere signs of similar degradation, on so large a scale that it was at first difficult to account

for; but the sound of gurgling water soon offered a clue to the mystery. On descending into a fissure between some rocks, Captain Gray discovered beneath the surface a cavern much resembling the remains that existed above-ground. Through it ran a small stream which, in the rainy season, would become a torrent; and it was evident that before many years elapsed the roof would give way, and what were now the buttresses and supports of a gloomy cavern would emerge into day, and become columns draped with creepers, surrounded by vegetation, and resplendent in the bright sunshine.

In South Australia and Victoria similar extensive caverns, supported by stalactites, are formed in the Tertiary limestone by the underground passage of water, and where calcareous deposits extend beneath the desert sandstone the falling in of its caverns would lead to the breaking up and more rapid denudation of the overlying sand-rock. The denudation of such a soft and friable material may also be rapidly effected by the wind alone, which, carrying sand particles with it, carves out exposed faces of rock even more rapidly than water. The denudation of so much of this deposit is not therefore difficult to account for; the great problem being—How was it first formed? Most writers assume that it is a marine deposit, and that almost all Australia must have been at this period depressed beneath the sea-level. But the abundance of fossils in the coralline limestone of approximately the same age, renders it certain that so extensive a deposit, if marine, would also contain many remains of shells and other marine animals, of which, however, not a trace has been found. Such an extensive depression is also inconsistent with what we know of the abundance of large mammalia in the immediately succeeding age (the Quaternary), which would certainly have required an extensive land area for their support. A large continent, with

lofty mountain ranges, is also necessary to supply the amount of denuded rock required to build up so extensive and massive a deposit, and this is inconsistent with its formation during a period of extensive submergence.

It seems more probable, therefore, that the desert sandstone is a lacustrine or inland-sea formation, and that during its deposit the surrounding land was both more extensive and more elevated than it is now. Instead of being submerged, and reduced in area, Australia was probably then at nearly its greatest size, and possessed of all the features of a great continent. Its mountains were loftier and more extensive, its rivers permanent, and its whole area well watered and productive. Its interior, instead of being parched and desert, was a great lake-country, perhaps even more remarkable than eastern equatorial Africa is now. These lakes or inland seas were probably formed by the gradual shutting up of all outlets from the central plateau by volcanic eruptions or by elevations of the land, so that the drainage towards the interior had no means of reaching the ocean. All extensive plateaus have, or have had, such enclosed basins, which are probably due to the upheaving forces being greater near the coast than inland. Thus, we have in North America the region of the great lakes, and the more elevated basin of the great salt lake of Utah, a portion of which has been drained by the cutting of the great cañon of the Colorado. In Asia the great basin of the Gobi desert is more extensive than the lowland interior of Australia; and were this basin nearer to the seaboard, so as to be supplied with vapour-laden air, it would soon be changed into a vast inland sea. It is evident then, that under the conditions we have supposed,—that of Australia having been, as a whole, more elevated and more extensive, and with far loftier mountains on its borders to condense the oceanic vapours and become the source of

perpetual streams,—all the lower portions of the interior would become flooded, till enormous fresh-water lakes were formed, bounded by the various ranges of granitic and palæozoic rocks. In these lakes the whole of the products of the denudation of the interior slopes of the mountains would be deposited, till, after countless ages, the highlands would be considerably lowered, and the lowland interior proportionally filled up. The extent of these lakes at any one time may probably have been very much smaller than that of the country now covered with the desert sandstone. When the water area became very large, evaporation would equal the supply, and the level would remain for a time stationary; but, as the lakes became gradually filled up by the growth of deltas at the entrance of every stream that supplied them, the waters would rise and again extend the area of water surface, while slow risings or sinkings of certain areas would change the centre of greatest deposition. The lapse of time required for such a formation must have been enormous; and over such a large area,—always, as we know, the theatre of volcanic action,—we must suppose that the subterranean forces would have been constantly at work, though the chief seats of their energies might gradually change. By this means the more elevated tracts might subside, and the old depressions become elevated, and thus the area would become widened over which the fresh-water deposits were formed. At length outlets were made by depressions in the mountain barrier at the north and south, while some of the rivers cut ravines by which they obtained access to the ocean. A general subsidence of the country followed, greatest probably on the west, and leading to the destruction of a large portion of the old continent. Wide areas of sandy lake bottoms were thus exposed, and the general lowering of the mountain ranges causing diminished rainfall, the climate became deterio-

rated, and the interior gradually assumed its present sterile aspect. The last remains of the great bodies of fresh water which once covered so much of the interior are to be seen in the numerous salt swamps and intermittent lakes of the south, the centre, and the west of the Australian interior.

14. *Origin of the Drifts and Alluviums.*

It was probably while these great changes were in progress in the interior of the country that another kind of denudation and deposition was taking place on the slopes and plateaus of the eastern mountains, resulting in the "gold drifts," whose origin we have already sufficiently explained as due in great part to successive lava-flows intercepting local drainage and checking the dispersal of the detritus of the Silurian rocks. Some of the drifts on the east coast have been found to be below the sea-level; and this supports the view that the whole country was elevated rather than depressed during the later Pliocene period. Near Smythesdale, in the Ballarat district, a number of fossil fruits were discovered at a depth of 150 feet, in a layer of black clay,—probably an old surface soil, just above the gold-bearing gravel. Baron von Müeller, the Government botanist, considers these to be all of extinct genera, but allied to various plants now living in the more tropical parts of Australia. The facts all point to their being at least as old as the later Pliocene, and the more tropical aspect is quite consistent with the country having been somewhat more elevated, if the general climate was then, as in the Northern Hemisphere, either warmer or more uniform. In the interior plains, both of New South Wales and Victoria, plant remains have also been found in gold-drifts, at various depths, all indicating that the country has never been submerged

beneath the sea during the whole period of their formation. Some of the sea-cliffs also, near Cape Howe, formed of sand and clay, are full of plant remains; clearly indicating a former much greater extension of the land in this direction, admitting of the formation of lacustrine deposits of great thickness.

The alluvial deposits in caves and on the interior plains, with their wonderful fauna of extinct animals of huge size, but allied to those still living in Australia, carry down the history of the country to the period immediately preceding the human epoch, and add their confirmation to the view, that during the later stages of the Tertiary epoch the country must have been more extensive, more fertile, and in every way more fitted to support an abundance of animal life, than it is now. We may very reasonably impute the extinction of so many of these animal forms, to the last great deterioration of the climate which reduced so much of the interior to the condition of a desert, and rendered vast tracts of fertile country subject to severe and protracted droughts, almost equally inimical to animal life.

In addition to the proofs of subsidence already adduced, we must add that afforded by the Great Barrier Reef which stretches for 1200 miles along the eastern coast of tropical Australia, at a distance of from 20 to 90 miles. On the outer side it sinks abruptly to a depth of 2000 feet or more, and this may be taken as a measure of the subsidence since it began to form. The manner in which it increases in width from north to south, renders it probable that the subsidence has been greater as we go southward, and this agrees with the belief of Australian geologists, that the eastern side of Australia has been greatly reduced by subsidence and denudation.

It thus appears that alike on the west, south, and east, there are indications that Australia was formerly

more extensive and more elevated; and we have seen that this wider area and greater altitude offer the best explanation of its many geological peculiarities, while they are absolutely indispensable to a comprehension of its wonderful development of animal and vegetable life, of whose richness and variety we only now behold the diminished remnant.

The period of subsidence has probably now ceased, and in the south and west of Australia elevation appears to have taken its place. In the district east of the Murray in South Australia, recent shells are abundant for 50 miles inland, and to an elevation of a few hundred feet, and raised beaches are found in various places all along the coast. The land too is still believed to be rising, for reefs off the coast have become more extensive, and soundings have decreased several yards in the last fifty years, though it does not appear that any actual difference of the water-level has been noticed at the seaports; so that the changes last referred to may be due to a change in the sea-bottom rather than to any general elevation of the coast. There can be no doubt, however, that there has been a recent slight elevation of land in many parts of Australia.

CHAPTER V.

THE AUSTRALIAN ABORIGINES.

1. *Physical Characteristics.*

ALMOST as peculiar and isolated as its flora and fauna are the black aborigines of Australia, who are now rapidly disappearing before the European settler, and whose low social culture, recalling the earliest stages in the history of the human race, stands in strange though by no means exceptional contrast to their fully developed speech. The handful that still survives are split up into a considerable number of tribes, forming collectively a special type, to be carefully distinguished both from the dark, woolly-haired Papuans, and from the olive-yellow, lank-haired Malays and Polynesians.

On the whole the Australian falls little short of the average European in height, while far inferior to him in muscular development, the limbs being thin and excessively lean, combined sometimes with an abnormal corpulence. The bones are delicately formed, and there is the usual total absence of calves so characteristic of the dark races generally. The cranial formation, somewhat finer in the male than in the female sex, is on the whole narrow and lengthy, with high cheek-bones, the lower portion of the forehead about the brows projecting, the upper receding rapidly. The nose, narrow at the root, thereby causing the eyes to appear drawn together, becomes broader and somewhat squat farther down. The ears are inclined a little forward, the mouth is large and

unshapely, while the teeth are, on the contrary, fine and white, the upper row, like the upper lip, mostly overlapping the lower. The jaw-bone is contracted, the chin small

NATIVE AUSTRALIAN.

and retiring, the complexion oftener coffee-brown than actually black, the hair richly developed, not only on the head, but on the whole body, the men showing a thick

growth of beard and whiskers. The pitch-black hair itself is somewhat curly, without, however, being woolly, and when cleaned from the mass of grease and dirt that usually clogs it, is fine and glossy. The effluvium arising from the skin, in itself peculiarly offensive to our sense of smell, is rendered still more unendurable by the body being greased with the oil of various large species of fish. The duration of life rarely exceeds fifty years.

2. *Mental Qualities.*

The mental qualities of the Australian may be pronounced fairly developed, though decidedly inferior as compared with those of most other savage races. In everything pertaining to daily life he displays uncommon skill, and his arms and implements, though highly primitive, are still well adapted to their purpose, and are used with great ingenuity in the pursuit of game. In fact, the native is almost unrivalled in tracking and running down his quarry; hence may be employed in such arts as call for mere mechanical dexterity. He is an excellent sportsman and herdsman, and not a bad artisan, provided the work is carefully and clearly explained to him beforehand. Possessing a considerable imitative faculty, he easily acquires foreign tongues, and even displays a rude talent for art. In caves on the north-eastern coast have been found tolerable figures of sharks, porpoises, turtles, lizards, starfish, canoes, and of some quadrupeds. On some flat rocks in New South Wales are figures of men dancing, as well as of kangaroos, sharks, and other animals, and many native implements are rudely ornamented with carved designs. It is stated, however, that they are quite unable to recognise accurate portraits of themselves, while rude outlines with the head greatly enlarged are appreciated. The higher mental qualities of foresight and self-restraint

are very slightly developed. No care is taken for the morrow, and life is passed in alternations of eating and sleeping, hunger and the chase. Each recurring winter brings famine and privation, but no attempt is ever made to store up food in time of plenty.

The opinions of different writers and travellers as to the mental and moral characteristics of the Australians are very divergent. Sir Thomas Mitchell does not think them by any means the lowest in the scale of humanity, adding that he found those who accompanied him in his journeys superior in penetration and judgment to the white men of the same expedition. Mr. Eyre found them to be frank, open, and confiding, and easy to make friends with. He declares that they have been greatly misrepresented and traduced, and that much of their assumed treachery and bloodthirstiness is the result of the cruelty and ill-treatment of the settlers. Sometimes they display the greatest cruelty and heartlessness, while in other cases they are affectionate and generous. They often show great affection for their male offspring, giving up to them the choicest food, carrying them when they are weary, and lamenting their death for months or even for years. Yet their old men and women are often abandoned when ill or wounded, and their wives are treated with the most atrocious barbarity. Although an unmitigated selfishness seems to be the ruling principle of their actions, yet in certain cases they give up self for the good of others. A successful hunter always shares his game with the rest of the tribe, even taking the worst and smallest portion himself; yet when unsuccessful and hungry he will cruelly beat or spear his wife, and if severely pressed by famine kill and eat his own children. No such virtue as female chastity is recognised; and as a wife is treated solely as a slave, and severely punished whenever the husband's wants are not fully supplied, it is not to be wondered that

infanticide should be common. The rights of property are recognised, and form the sole foundation of morals; and wives, being property, are wholly subject to their masters. No one takes a woman's part, even though known to be quite innocent of that for which she is punished. And their punishment is most fearful. They are knocked on the head with heavy clubs, speared through the legs and arms, or deeply gashed with flints in various parts of the body; so that an Australian woman is usually a mass of scars, and the majority are said not to live much beyond the age of thirty.

Summing up the mental characteristics of the Australian aborigines, Mr. Wake says—"It is evident that these people are, as compared with more advanced races, in the condition of children. Among all the tribes, whether the more hostile ones of the East, or those which in the West appear to give evidence of a milder disposition, there is the same imperfect development of moral ideas. In fact, none of them have any notion of what we call morality, except the simple one of right and wrong arising out of questions of property. With this moral imperfection, however, the Australian natives exhibit a degree of mental activity which, at first sight, may be thought inconsistent with the childish position here assigned to them. It is evident, however, that this activity results from the position in which the Australian is placed. Extremely indolent when food is plentiful, when it is scarce the greatest exertions can be made for its acquirement, and the repeated exercise of the mind on the means of accomplishing the all-important end of obtaining food, has led to a development of the lower intellectual faculties somewhat disproportionate to the moral ideas with which they are associated."[1]

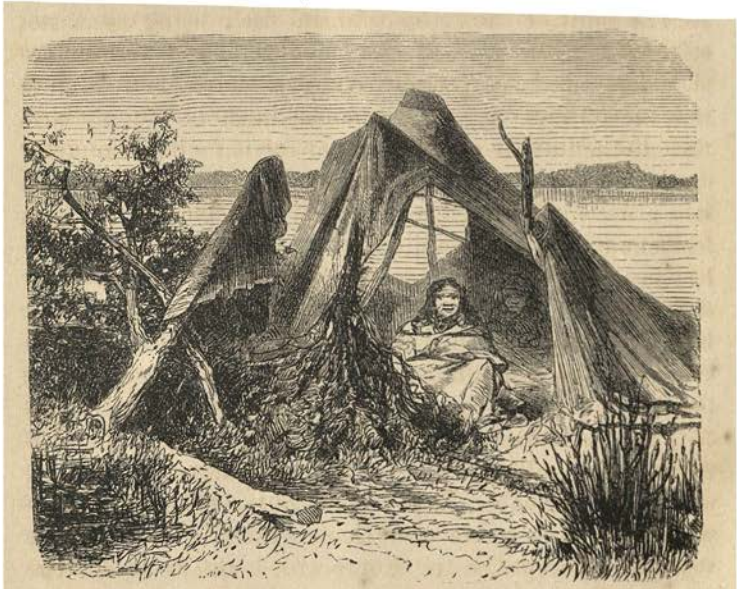
[1] C. S. Wake on the Mental Characteristics of Primitive Man as exemplified by the Australian Aborigines. *Journal of the Anthropological Institute*, vol. i. p. 74.

3. *Clothing, Dwellings, and Food.*

In most places the Australians go quite naked, and seem almost wholly unconscious of the sense of shame. In the south, during the cold season, they wrap themselves in a mantle of kangaroo skins, covering the shoulders and back; while when traversing thorny scrubs they sometimes use an apron of skins as a protection, though they never adopt such an article of clothing for decency. No covering to the head is ever worn, though it is always more or less decorated with teeth, fish-bones, feathers, or the bushy tail of some animal. A girdle of hair is worn for the purpose of supporting the dowak or digging-stick and the apron when required, and a similar band is often tied round the head to keep the hair out of the eyes, though this object is sometimes obtained by plastering the hair with a mixture of fat and ochre.

Of all the more extensive races of mankind there is perhaps none whose dwellings are inferior in construction, comfort, or permanence, to those of the Australians. In parts of the country where caves and rock-shelters abound, some of the tribes are true cave-dwellers; but for the most part they construct rude huts or screens of twigs and bushes, sometimes covered over with bark, foliage, or turf, so as to keep out the rain. As they are constantly wandering about, these huts are never permanent constructions, but are hastily put together to afford shelter for a few weeks or months in some locality where food can be obtained. Most of them are very small and low, just sufficient for a single family to shelter under; but occasionally long huts are met with in which from five to ten families sleep in common. During the fine Australian summer they live without any shelter. Where the gum trees grow to a large size, pieces of bark are obtained from them sometimes twelve feet long and

eight or ten wide, which alone form a sufficiently good hut. More rarely huts are built of logs of wood and turf under the slope of a hill, so substantial that they can be ridden over on horseback.



NATIVE AUSTRALIAN HUT.

Their food is very varied, and is generally obtained in tolerable abundance. Of animal food they eat almost everything living, even those creatures most repugnant to civilised peoples. All the mammalia and birds of the country are of course eaten when they can be caught; but besides these, lizards, snakes, and frogs are highly esteemed, as well as the larvæ of many insects, white ants which are very abundant and are eaten alive, and even a kind of moth which is sometimes caught in great quantities, and whose body is a fat and delicious morsel. Frogs are dug out of swamps or caught in ponds, and devoured in

all stages from the tadpole upwards. All kinds of snakes are esteemed, the head alone being rejected. Fish are caught in the rivers or sea; as well as many kinds of shell-fish, especially mussels. Cannibalism is also practised in most of the tribes, human flesh being eaten not only from necessity but from choice. Old women are often killed for this purpose, and even wives and children in times of scarcity. The common mode of cooking is to roast the animal, if small, by throwing it for a few minutes on the embers; but the intestines and fat are often eaten raw. All kinds of eggs are highly esteemed, and both these and flesh are often eaten in a state of semi-putrefaction. Occasionally the earth-oven is used to roast animals whole; and sometimes even water is thrown on heated stones, and then covered up with the vegetables and other food—the most perfect form of cookery among the Australian natives, who have never so far advanced as to make the rudest pottery, and are thus quite ignorant of the use of boiling water for culinary purposes. A large variety of vegetable food is also obtained, although no country is less productive than Australia in fruits or vegetables acceptable to Europeans. But even in the most sterile parts of the country the inhabitants manage to obtain food. One of the best vegetables consists of the roots of a species of wild yam, which is in some districts very abundant, and often more than three feet long. Next in importance is the *Typha latifolia* a species of bulrush. It is dug up by the women, the roots roasted, then pounded and kneaded into small cakes. The young leaves of the grass-tree also furnish abundance of food. Many other kinds of roots are eaten, and in some cases the bark or outer skin of the roots of trees is roasted. There are a few eatable fruits and berries. The seeds of the *Acacia sophoræ* and of many other Leguminosæ; the gum of several acacias, the fleshy leaves of mesembry-

anthemums; various species of herbs, such as nasturtium, cardamine, and chenopodium, which often cover acres of ground on the banks of rivers and on flooded grounds; several kinds of fungi, and manna from the leaves of *Eucalyptus mannifera*, all supply food in more or less abundance. Honey, too, is obtained from banksia flowers, from the body of the wild bee, and from its nest, which is found by gumming a small white feather to a captured bee and then following it till the store of honey is discovered.

Much ingenuity is shown in discovering water, and natives will live for months where Europeans will die of thirst. Not only is every spring and rock-hole in the country known, but water is often obtained in the driest sand by making excavations ten or twelve feet deep. Even where no water can be obtained by these means, the Australian will support life on the water to be obtained from the roots of certain trees and shrubs. These are followed through the sandy soil for twenty or thirty feet, and on being extracted and broken into small pieces exude a sufficiency of water to satisfy the thirst; while at other times the dew collected on long grass is utilised for the same purpose.

4. *Weapons and Tools.*

The weapons of the Australian exhibit more ingenuity and skill than their houses, their clothing, or their mode of cookery. They are, it is true, entirely ignorant of the bow and arrow; but they possess weapons of their own which exhibit an equal amount of invention—the boomerang and the throwing-stick. The boomerang is a flattened piece of hard wood about three feet long, and rather suddenly curved in the middle. When thrown in the air it exhibits strange and erratic motions, sometimes going on in a zigzag course, or circling upwards in a

spiral manner, or returning back again to near the body of the thrower. When aimed among a flock of birds its erratic motions cause it often to bring down several. In war it is thrown downwards so as to strike the ground, when it rebounds with great force again and again. The throwing-stick is for the purpose of giving increased velocity to a kind of light spear about ten feet long. It is a straight flat stick, with a projecting point or a socket at one end, which holds the lower end of the spear, while the other end of the stick is grasped firmly in the hand and the spear held parallel to it between the finger and thumb of the same hand. A greatly increased impetus is thus given to the weapon, which can be thrown with great accuracy for a distance of fifty yards. Larger spears of various kinds are used in war and for hunting, together with others having double points or movable heads for catching fish. Many of these are barbed, but the common spears used for punishment are smooth-pointed. Clubs of various kinds are formed of heavy wood, some sharpened like swords or with pieces of sharp flint let in to form a cutting edge. Long and narrow shields are made, which are very skilfully used in stopping spears. Owing to the natives having no cutting tools but flint and shells, the labour bestowed on some of these weapons is enormous. Their spears and boomerangs are repeatedly heated and straightened, and each time proved till the owner is satisfied. The clubs and shields are often cut out of solid blocks of wood. Mr. Oldfield found a large gum tree with an enormous excavation in it about ten feet from the ground. This cavity was about five feet long, three broad, and the same in depth, cut somewhat obliquely so as to follow the grain of the wood, and having in its centre a mass of wood in the form of a native shield. It had evidently been intended to detach this completely from the tree, but either some defect was

found in it, or the workman was prevented from finishing his task. The excavation had been made deep enough to go beyond the sap wood, and it was calculated that about thirty cubic feet of timber had here been absolutely scraped away, the only tool used having been a piece of flint fixed in a handle.

Among the various tools and implements used by the Australians are stone hatchets of several kinds, digging sticks, spades, bone awls for boring skins, netting needles, nets made of sinews, fibres, or hair, baskets and mats, water-skins and cloaks of opossum or kangaroo skin. The flint tools are shaped by means of a wooden hammer, and they are secured in their handles chiefly by means of a hard and tenacious cement made from the gum of the grass-tree, tempered by fire, kneaded, and mixed with powdered charcoal. Canoes are formed from the bark of gum trees, about fifteen feet long, three feet wide, and eight inches deep, held open by cross sticks. These are used on the Murray and in many parts of the south coast, but in the west canoes seem to be quite unknown, and in the north and north-east they are dug out of tree trunks. Some tribes make fish-hooks, which are never used by others. The whole household goods of the Australian savage consist of a dowak and spears carried by himself, and a few digging sticks with a small net bag carried by his wife. This bag usually contains a few packages of pigments, some pieces of flint, a piece of the Xanthorrhea gum, some sedge and kangaroo-tail sinews for sewing, opossum teeth or bone needles, and scallop shells for drinking.

As the tribes of various parts of the country continually come in contact with each other during their wanderings, they obtain by barter products which their own district does not supply. Thus the Watchandies of West Australia buy a particular kind of fishing-net, shells for drinking-vessels, and a much-esteemed kind of flint

from the north; boomerangs, shields, and red ochre from the south; and a kind of pipeclay used as a mourning pigment from the east. In return they supply the northern tribes with ty-a-lo—the gum from the Xanthorrhea or grass-tree; to the southern men they give the beautiful rose-coloured crests of a species of cockatoo; and to the eastern men flints. Of these articles the flints and red ochre are the most valued, owing to their being found in few localities, while they are both necessaries of savage life. The native Australian can never have too much of these, as they can always be exchanged for other articles, and thus to some extent supply the place of money. Fire is obtained by rubbing together two pieces of wood, but as this is laborious and almost impossible in very wet weather, they take great care to prevent their fires from becoming totally extinguished, and should this occur, will prefer to go to a neighbouring encampment to procure it. It is even stated that some tribes cannot procure fire for themselves, but this is very improbable.

5. *Occupations and Amusements.*

The life of the Australian native is one of alternate abundance and privation, idleness and activity. The chief occupations of the men are hunting and war; of the women the procuring of vegetable food and cooking. In hunting and fishing great ingenuity is shown either alone or in combination. Kangaroos are either speared, netted, or caught in pitfalls. Hunts are sometimes arranged by large parties, in which the game is skilfully driven down ravines or valleys, along which hunters are secreted at intervals to spear the animals as they pass. Rude fences of bushes are often made to leeward of thickets, in which a few openings are left; and on the game being driven by a party to windward, it makes for

these openings and is there speared or captured. Trees are climbed to get opossums out of their holes; while wombats and other burrowers are dug out of the ground. Birds are wounded by the boomerang, or are caught in nets or snares. Long nets are often suspended between trees over water, and wild ducks driven into them, the birds being made to fly low by a native secreted in the tree imitating the cry of a hawk as they approach. Others are snared by nooses suspended from reeds. Fish are caught with nets of various kinds, or, by some of the tribes, with hooks and lines. Weirs too are constructed; or the fish are speared from a canoe by firelight. During the summer the Australian obtains an abundance of food, and lives luxuriously, but in the wet season it is much more difficult for him to procure either game or vegetable food, and he often passes months in a state of semi-starvation. The making of weapons and tools, digging for water and building houses or canoes, complete the usual occupations of the men; while the women are laboriously employed in digging up roots or tubers, searching for fruits or cresses, collecting shell-fish, grubs, ants, and other such eatables, procuring firewood, carrying water, making nets and bags, preparing skins for clothing, and carrying the whole household wealth whenever the family or tribe are moving about.

Their amusements consist chiefly of spear-throwing, dancing, story-telling, string-puzzles, and singing; and in adorning themselves with paint, grease, and feathers,—an adornment confined wholly to the men. The dances usually take place on moonlight nights, and are either warlike, licentious, or in imitation of the motions, habits, and chase of animals. Whole tribes often meet on these occasions, and many ceremonies are gone through. They get greatly excited at these corobbories as they are called, and will sometimes continue the amusement through the whole night.

6. *Government and War.*

The Australians seem to be absolutely without any form of government other than that of the family. The tribes are bound together by identity of language and customs, and are to some extent confined to certain territorial limits, but they have no recognised chiefs. Yet, strange to say, they strictly follow certain rules of conduct sanctioned by public opinion, which hardly any one is bold enough to infringe. The private property of individuals is rigidly respected, insomuch that every robbery, whether it be of a weapon or a wife, has its appointed punishment, which is generally the having a spear thrust through some part of the body, usually the arm or thigh. The offender generally submits to this punishment, coolly standing still while the injured party spears him in the proper form. In some tribes of Western Australia the punishment for taking away another man's wife, is, that the offender should hold out his leg while each male of the tribe sticks his spear into it. This he endures stoically, though the wounded limb becomes a shapeless mass of torn flesh; but so hardy are these savages that with no remedy but a little fine dust, the wounds, however severe, heal quickly. For the woman there is no fixed punishment, as she is absolutely in the power of her husband, who can beat, maim, or kill her, just as he pleases. There are also many complex rules as to names and marriage; as to not naming or looking at certain relations; as to revenging death caused by an enemy; as to the abstaining from certain foods by women and young persons; and many other customs whose details would be out of place here.

When one tribe has cause of war with another at a distance, formal notice is sent, and a time appointed, so that the encounter has all the character of a duel according to rule and custom. On such occasions there is much

spear-throwing; but both parties are so skilful and so cautious, that comparatively little mischief is done. Sudden fights, however, sometimes occur during the friendly meetings of tribes, and these are more bloody; while worst of all are the massacres of small parties surprised or surrounded by hostile tribes.

7. *Religion—Ceremonies of Initiation, Marriage, and Burial.*

The Australians have no religion except the dread of ghosts and demons. There is no belief in a supreme deity, and no form of worship. There are even no idols, and no forms of propitiation to the spirits, except that the sorcerers profess to cure diseases which demons are supposed to have produced; for, according to the belief of the Australians, as of most other primitive peoples, all evils and misfortunes are occasioned by wicked spirits and magicians, and hence can be removed only by breaking or counteracting their power. Nevertheless they seem to believe in a future existence analogous to the happy hunting-grounds of other savages; but success in reaching these does not depend on any kind of conduct, but on the deceased person being properly buried. Men who are slain in battle, and their bodies left to rot or be devoured by wild dogs, are supposed to become evil and wandering spirits. A great number of caves, thickets, and even pools of water, are believed to be haunted by such spirits, and will not be willingly approached by natives. Owing probably to the superior power of the white races, and their occupation of many of the best hunting-grounds, it has become a common belief that white men are really the spirits of the natives come to life again; and that they themselves will, after death, change into white men, and enjoy all the privileges of that superior race.

Notwithstanding their very low condition as regards religious beliefs or practices, the Australians make use of some of the initiatory ceremonies usually associated with religion. Circumcision is used in the north and in the south, but not in West Australia or on the Murray River. In South Australia the males have to pass through three distinct ceremonies of initiation. At about ten years of age the boy is covered with blood from head to foot, several men bleeding themselves for the purpose. This is to accustom him to the sight of blood. At about twelve or fourteen circumcision is performed; and when about twenty he has to submit to a process of tattooing or scarring, which is produced by cutting gashes in the back, shoulders, arms, and chest, so as to leave scars or raised cicatrices. These vary for the different tribes, and the scars are sometimes made prominent by the patient lying down with the freshly cut wounds close to a hot fire. On the east coast the two front teeth are knocked out instead of circumcision; and the septum of the nose is almost universally pierced, and a long bone or other substance thrust through it. In some parts, as on the Murray River, girls are subjected to a horrible process of scarring, the whole back being cut in horizontal bands of gashes made with sharp flints; and sometimes the belly and arms are treated in the same way. The torture of this operation is dreadful, yet the screams of the patient are the subject of merriment to all around. In most cases, however, the girls voluntarily submit to it, because the scarred back resulting from the process is greatly admired. In some parts of the country both males and females are subjected to other initiatory rites even more horrible and disgusting.

There are no rites of marriage, the wife being obtained either by purchase from the father or brother, or by a forcible abduction. There are, however, certain rules by

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which marriages are forbidden between parties having the same family name, while in other cases females are devoted to certain men from birth in accordance with rules and customs not yet fully understood. If these regulations are broken, the woman is killed and often eaten, while the man is subject to a severe punishment by spearing. When a man has once obtained a wife in a proper manner, he is her absolute master. She is expected to provide him with an ample supply of roots and other kinds of vegetable food, and to be in every way his willing slave. From him she receives nothing but the bones and refuse of the game, and is liable on the slightest caprice to be cruelly beaten or speared; while, when ill or seriously injured, she is left to die without the slightest compunction. Few women are free from frightful scars on the head, and marks of spear wounds on the body, while some are completely covered with such proofs of the ill-treatment of their husbands. A good-looking girl is nevertheless much admired, and the result is that she is frequently abducted, or bought and sold; and thus the early life of a young woman at all celebrated for her beauty is generally one continued series of captivities to different masters, of ghastly wounds, of wanderings in strange families, of rapid flights, of bad treatment from other females amongst whom she is brought, a stranger, by her captor; and rarely does a girl possess unusual grace and elegance, but she is soon marked and scarred by the furrows of repeated wounds.

Polygamy is practised to a limited extent, some old men having three or four wives; but owing to the ill-treatment of women, and the infanticide of female children, there is always a surplus of men; and as women are slaves who not only add much to the comfort of their masters as providers of food and carriers of burdens, but who also serve as objects on which to give free vent to

their brutal passions, they are much coveted. Hence, women are constantly stolen from other tribes, and expeditions for this purpose form one of the chief occupations of the younger natives.

Illness and death, especially of the young and healthy, are attributed to the spells of enemies and sorcerers. Divination is made by examination of the state of the body internally, and if the culprit is named by the sorcerer, he at once submits to be speared in the arm by the nearest relation of the deceased. The mode of burial varies much in different parts of the country. Sometimes a circular grave is made, four or five feet deep, and the body placed in it with its face towards the east; and a high mound is made over it, often covered with bark or thatch. In New South Wales the body is often burned on a regular pile of wood, and the ashes buried. On the Lower Murray the body is placed on a high raised platform of sticks, covered with grass, and left to decay. In the north it is placed in the branches of a tree and covered with bark and mats. Sometimes rude huts of boughs are built over graves. Young children are not buried for months, but the bodies are carried about constantly by the mother till they become dry and mummy-like. Women are often not buried at all, or, if they are, it is without any ceremony, and merely for the sake of getting rid of the body. In some tribes women are killed and eaten as soon as they become old. At burials of men the women-relations cry and lament, and cut themselves with flints and shells; and the graves are often visited by the women for months afterwards, when they always renew the weeping and laceration. As a sign of mourning they cut or burn the hair off and whiten themselves with pipe-clay, sometimes plastering their foreheads and noses with it, or forming a complete plaster cap over the whole head. For females no such mourning ceremonies are permitted

8. *Language.*

The languages of the native Australians are very numerous, which is readily explained by the existence of so many isolated tribes, some consisting of only a few families. But notwithstanding their great variety all these idioms seem to be fundamentally connected. But beyond this mutual relationship to each other they have no clear affinity with any other linguistic families of the Old and New World, occupying, like the race itself, an absolutely independent position. They are of polysyllabic formation, and as the accent generally falls on the penultimate they are by no means inharmonious. Besides this happy outward feature they are also well developed in their inner structure, and are especially rich in expressions for such sensuous phenomena as are most attractive to the savage. On the other hand, they are incapable of expressing abstract conceptions of any sort. Yet they are fully adequate to the limited intellectual requirements of the native, whose world of thought is entirely restricted to the material wants and impulses of his daily existence. It is also remarkable that the Australian, as is evident from his speech, has no sense of number—that is of abstract thought—most of the tribes being able to count only up to three, and some few to five, which then becomes an indefinite expression of multitude. As might be expected from their low mental culture, their national poetry is of a very humble order, their songs consisting of short, disconnected snatches of thought, without any deeper associations than such as are prompted by momentary excitement. There are but scanty traces of fables, legends, and epigrammatic or proverbial poetry, such as are found in abundance, and often happily expressed, amongst the Hottentots and many other African races.

9. *Probable Origin of the Australian Aborigines.*

Their physical features no less than their mental condition forbid us to associate these people with the inhabitants of any of the surrounding countries. They are entirely separated from the Papuans of New Guinea by the silky hair, ample beard, and contrasted features, no less than by their total ignorance of the bow-and-arrow, which is the chief weapon of most Papuan tribes. Still farther removed are they from the Malays and the Polynesians; so that we are driven to suppose that they are, like the vegetable and animal productions of their country, the remnant of an ancient and peculiar race. This is rendered the more probable by the singular number of defects in their rude mode of life. They never in any situation cultivate the soil for any kind of food-crop. They never rear any domestic animal for food or companionship, except the dog, which was almost certainly introduced with man. They never build permanent dwellings, but content themselves with mere hovels for temporary shelter. They are totally unacquainted with pottery, and have no vessels in which they can boil water. They neither manufacture nor possess any household goods, beyond such small articles of clothing, ornaments, utensils, and weapons, as they can carry on their persons, or in the family store-bag. None of the surrounding countries exhibit man in so low a condition as this, and we must therefore believe that the Australians represent a primitive race, which has been superseded in other countries by somewhat higher tribes, which in successive waves have spread themselves from their original centres. It is now generally admitted that the only other people with whom the Australian aborigines can be associated are some of the hill-tribes of Central India, with whom not only their physical features, but to some

extent their languages, correspond. The Papuans, who are a decidedly higher race, and most resemble Africans, may have formed a second great wave of immigration, spreading perhaps by means of islands now sunk beneath the waters of the Indian Ocean. They in their turn have been displaced by the Malays in a large part of the islands between Australia and India, the Papuans only maintaining themselves as far west as Timor and Flores.

Some authors have attempted to divide the Australians into two races: but it seems more consonant with the facts to consider them as essentially one, though partial immigrations and intermixtures, both of Malays and Papuans, may have led to certain families or tribes presenting somewhat exceptional physical peculiarities.

It has been estimated that when Australia was first settled by Europeans the native population could not much have exceeded 150,000. They have since greatly diminished, owing to the occupation and settlement of the more fertile parts of the country, as well as from the diseases and vices introduced among them by the convicts and lower class of settlers. Notwithstanding all these causes of depopulation, great numbers still roam over the interior, and it is believed that they amount to from 70,000 to 80,000; and as so much of the country they inhabit is not of a nature to invite occupation by the white race, it seems not improbable that the degraded Australians may continue to exist long after the much higher New Zealander and Tahitian have disappeared.

AUSTRALIA
AND
TASMANIA
TORRES STRAIT
GULF OF CARPENTARIA
INDIAN OCEAN
QUEENSLAND
NEW SOUTH WALES
VICTORIA
TASMANIA
INDIAN OCEAN
London Edward Stanford 55 Charing Cross.

CHAPTER VI.

THE BRITISH COLONISATION OF AUSTRALIA; THE DISCOVERY, EXPLORATION, AND MATERIAL PROGRESS OF THE COUNTRY.

1. *Outline of Australian Colonisation.*

ALTHOUGH first visited by French navigators, later on by the Dutch and Spaniards, and last of all by the English, this nation alone has established itself in Australia, and claims undisputed possession of all the mainland. The physical aspect of the land, as already described, sufficiently explains the fact that other less foreseeing peoples felt little inclination to make permanent settlements in a country which produced neither marketable slaves, nor spices, nor apparently any of the precious metals—nothing in fact but rich pasturages. Hence, when gold was here actually discovered in 1851, drawing universal attention to this region, as it had to California a short time previously, other nationalities found that it was too late to form independent settlements anywhere on this continent, which had already been either permanently settled by the enterprising Anglo-Saxon race, or else formally declared to be attached to the Crown of England. Since that event the progress of discovery has been very rapid, and British colonies have been everywhere established, some of which have already risen to a high degree of material prosperity under the fostering influence of enlightened institutions modelled on those of the "mother of empires." The whole of the mainland is now par-

celled out into five such colonies; more or less extensive tracts on the seaboard being actually inhabited, while much of the desert interior remains desolate and unpeopled.

Each of these colonies possesses a separate administration under a special governor appointed by the Crown, and two Houses of Parliament, in most cases freely elected by the people. So practically independent and yet so loyally attached to the mother country, are these colonies, that for some years past the regular troops have been withdrawn, their immunity from foreign aggression being secured partly by bodies of local volunteers, but perhaps still more by the silent influence of the tremendous power symbolised by the presence of the British flag. The financial condition of the colonies is extremely satisfactory, the revenue being in most cases considerably in excess of the expenditure. Liberty of conscience is everywhere established as in England, and as in that country the Protestants are in a large majority. But the religious sentiment is perhaps less active than either in England or in America. Science and art, as might be expected, are still somewhat backward, nor is popular education as forward as it might be, while the industries are still in their infancy; hence many of the wants of the colonists are still supplied from the mother country.

2. *Early History, Discovery, and Maritime Exploration of Australia.*

Under the name of Jave la Grand, Australia is represented on French maps dating as early as 1542; and a Provençal pilot named Guillaume le Testu, whose name is appended to a map dated 1555, is believed to have been its discoverer. But the earliest distinct reference to Australia in any book is the following passage from the *Descriptionis Ptolemaicæ Augmentum*, by Cornelius

Wytfliet, printed at Louvain in 1598: "The *Australis Terra* is the most southern of all lands, and is separated from New Guinea by a narrow strait. Its shores are hitherto but little known, since after one voyage and another that route has been deserted, and seldom is the country visited, unless when sailors are driven there by storms. The *Australis Terra* begins at one or two degrees from the equator, and is ascertained by some to be of so great an extent, that if it were thoroughly explored it would be regarded as a fifth part of the world." It is evident, therefore, that the northern part of the country was tolerably well known long before Torres, in 1606, sailed in a Spanish ship through the straits which have received his name, or Dirk Hartog in 1616 explored the extreme western coast. The extent of the country southwards was first ascertained in 1627, when the Dutch ship "Guldene Zeepard" sighted much of the south coast from Cape Leeuwin eastward. A few years later, in 1642, Tasman discovered the country which he named Van Diemen's Land, and which he believed to be the southern extremity of the great *Terra Australis*—which it really is, although separated from it by an arm of the sea.

Dampier was the first Englishman who visited Australia (in 1688), but only the north-western coast; and it was not till nearly a century later, in 1770, that the finest portion of the country, the east coast, was discovered and explored by Captain Cook during his first voyage round the world. He came upon the Australian mainland in April 1770, at Gipps Land in Victoria, and from this point skirted the entire eastern coast to Cape York, and thus first made known to the world the extent and outline of the Australian continent. The expedition stayed a week at Botany Bay, and the naturalists who accompanied it—Sir Joseph Banks and Dr.

Solander—revelled in the many curious and entirely unknown forms of vegetable and animal life which this locality produced. During their stay here and at several other places on the east coast, nearly a thousand species of plants were collected, disclosing to botanists a new world of strange shrubs and beautiful flowers.

Twenty years later Mr. Surgeon Bass explored the straits which have been named after him, and subsequently, accompanied by his friend Lieutenant Flinders, circumnavigated the island of Tasmania. Two years afterwards Flinders explored Moreton Bay and Harvey's Bay, the entrances to which only had been seen by Cook, and in 1801 he was sent as captain of H.M.S. "Investigator" to complete the survey of the coasts of Terra Australis. On this voyage he carefully examined the south and east coasts from King George's Sound, and surveyed Spencer's Gulf as well as Gulf St. Vincent, and much of the coast farther east and north. The shores of Victoria were explored in 1800 by Captain Grant, and in 1802 by Lieutenant Murray, who discovered the spacious landlocked bay of Port Phillip, at the head of which now stands the populous city of Melbourne. From 1837 to 1843 the surveying-ship "Beagle," under Captains Wickham and Stokes, completed our knowledge of the Australian coasts, all the more frequented parts of which are now accurately laid down on our charts.

3. *Inland Exploration of Australia.*

The first British settlement was made at Port Jackson in 1788, and for twenty-five years inland exploration was limited to a tract of some fifty miles wide between the Blue Mountains and the sea. Several attempts were made to pass these mountains, but without success; till, in 1813, when a summer of severe drought made it very

important to discover new pastures, three colonists—Messrs. Wentworth and Blaxland, and Lieutenant Lawson—succeeded in passing the barrier, and reached the valley of the Fish River and the fertile Bathurst Plains. The Government surveyors then carried on the work. In 1815 the Lachlan River was discovered, and being traced in a south-westerly direction for 300 miles, ended in a vast extent of marsh, and was thought to empty itself into a great inland sea. Soon after the Macquarie River, flowing to the north-east, also led its explorers to a marshy tract, and was supposed to confirm the inland sea theory. The exploration was continued to the east over the Arbuthnot Range, the Liverpool Plains, and the Peel and Hastings Rivers, reaching the sea at Port Macquarrie, and adding much to the knowledge of the interior of the country. The same surveyor, Mr. Oxley, starting in 1823 from the Hastings River northward, traversed the elevated district of New England, and entered what is now the colony of Queensland, discovering the Brisbane River and Moreton Bay.

4. *Early Explorations of Hume, Sturt, and Mitchell.*

In 1819 a young colonist, Mr. Hamilton Hume, commenced his career as an explorer. He discovered the Murrumbidgee River, and in 1824 the Murray, and after tracing them a long way marched south, rounding the spurs of the mountains till he reached Port Phillip. Captain Sturt then took up the work, with Hume for his guide. He traced the Macquarie River downwards to the marshes, and then pushing on discovered the Darling. In a second expedition in 1831, he traced the course of the Murrumbidgee and Lachlan into a great river—the Murray, into which the Darling was also found to empty itself about a hundred miles farther down. Still floating

down the stream, Captain Sturt at length reached the Lake Alexandrina, a deep inlet of the sea forming the mouth of the great Australian river. This grand discovery solved the mystery of the drainage of the whole interior of New South Wales, and opened up a great and fertile country for colonisation.

Major Mitchell, Surveyor-General of New South Wales, carried on the exploration of the upper waters of the Darling; and it was while accompanying these expeditions that Mr. Cunningham, the botanist, was murdered by the aborigines on the Bogan River, the first of the martyrs to Australian inland discovery. Major Mitchell afterwards tracked the course of the Lachlan through the marshes which had stopped previous explorers, and discovered much fertile country where Mr. Oxley had met with nothing but arid desert—one of the early indications of the now ascertained uncertainty of Australian seasons. In 1835 the country beyond the Murray in Victoria was examined, the Loddon and Wimmera Rivers discovered, the Grampians crossed, and the river Glenelg traced to the sea. Returning over the Dividing Range, he passed through what are now the gold-diggings, and descended the Goulburn River to the Murray. He thus traversed much of the finest part of Victoria, and was so much struck with its fertile soil and beautiful scenery, that he named the district "Australia Felix," declaring that he had at length found a country ready for the immediate reception of civilised man, and fit to become the abode of one of the great nations of the earth.

5. *Journeys of Eyre and Sturt to the Desert Interior.*

Soon after the colony of South Australia was founded in 1836, and its capital fixed at Adelaide, exploration was commenced towards the unknown interior. In 1839

Mr. Eyre (since so well known as Governor of New Zealand and of Jamaica) discovered Lake Torrens, connected with the head of Spencer's Gulf by a narrow channel of mud and water; and in 1840 he explored a portion of its eastern shores and the adjacent Flinders Range, but was obliged to return for want of water. He had intended to cross the lake, but found it an impassable swamp of salt mud. He then turned westward and commenced his perilous journey along the shores of the Great Australian Bight, and after great danger and many sad disasters, he reached King George's Sound, in Western Australia (a distance of 1209 miles), with a single native boy, having left Adelaide more than a year before. This was the first extensive journey across the waterless deserts of Australia, and well exhibited the perils of such an attempt, which in this case owed its success to a fortunate accident. When Mr. Eyre had reached 250 miles from his starting-point (the head of Spencer Gulf), he had already lost four of his best horses, which deprived him of the means of carrying provisions for his whole party. He therefore sent back his companion Mr. Scott, with three others, and continued the journey accompanied only by Baxter his overseer, two natives who had started with him, and a native servant of his own, named Wylie. He had with him ten horses, six sheep, and provisions for nine weeks. Before moving the animals it was necessary to secure water for them, and Eyre himself explored in advance, sometimes five or even six days at a time, without finding a drop. They were reduced to collecting dew with a sponge and rags, and most of the horses died from fatigue and thirst. When still 650 miles from their destination they had only three weeks' provisions left, and Baxter proposed to return, but Eyre was resolute to go on. The two natives then deserted, but after a few days came back starving and penitent, and were permitted

again to join the party. But in the night they shot the overseer and ran away, taking with them the two most serviceable guns and almost all the ammunition, and were never more heard of. Eyre was now left with his servant Wylie and two horses, with a very small store of provisions, and more than 600 miles of unknown desert to traverse. Their whole stock consisted of 40 lbs. of flour, four gallons of water, and part of a dead horse. The last water had been left three days before, and they knew not when more might be obtained. It was 150 miles farther before they obtained a fresh supply. Thus they struggled on for a month, living on horse-flesh, fish, or occasional game, with a little flour-paste or damper. They then fortunately discovered a whaling-ship near the shore, and were kindly received on board for a fortnight, and this almost certainly saved their lives. Being sufficiently recruited, they continued the journey, and after undergoing further hardships for twenty-three days, succeeded in reaching King George's Sound.

In 1844 and 1845 Captain Sturt, who had so successfully explored the great rivers to the west of the coast-ranges, made the first real attempt to penetrate into the very centre of Australia. Starting from a bend of the Darling, about 130 miles above its confluence with the Murray, in October 1844, he travelled in a north-westerly direction for about 250 miles till he reached an easterly extension of Lake Torrens. Returning some distance, he struck due north to the Grey Ranges, where he established a depôt, in which he was delayed six months waiting for rain to furnish a supply of water in advance. He then pushed on in a north-west direction, passing over a barren country and endless sand-ridges, and at length over a plain thickly covered with fragments of quartz rock, and entirely without vegetation. This was succeeded by an equally barren mud plain, and then more

sand-ridges stretching away into the unknown interior. A remarkable feature of the sand-ridges was their perfect straightness and parallelism, while on both sides of the low desert, tract, fifty miles wide, they lay in exactly the same direction. Farther on he was again stopped by an extensive plain covered with the dreaded spinifex grass and a mesembryanthemum; the soil being salt, and of such a nature that rain would have rendered it absolutely impassable. He then came to a creek or watercourse with water abundantly at intervals, and followed it for about 60 miles, when it became salt and then terminated in the sandy desert, whose parallel ridges with spinifex and mesembryanthemum stretched on every side. Crossing this for 34 miles with no sign of grass or water, he turned back from a point beyond which still lies the largest blank on the central portion of the map of Australia. It was a horrible country, which Captain Sturt believed to have no parallel on the earth's surface. The spinifex grass was close and matted, and the horses were obliged to lift their feet straight up to avoid its sharp points. From the summit of one of the sandy undulations ridges were seen extending northwards in parallel lines beyond the range of vision, and appeared as if interminable. To the eastward and westward they succeeded each other like waves of the sea. The sand was of a deep red colour, and a bright narrow line of it marked the top of each ridge. Not a blade of grass was visible, and the aspect of the country was declared even by these experienced explorers to be "terrible." This is Sturt's Desert, and the nature of the country is such that it must be always uninhabitable. About 200 miles to the west, however, the telegraph line passes through a comparatively fertile district.

6. *Leichardt and Kennedy in the North-East.*

We must now turn awhile to the north-eastern portion of the country, where an enthusiastic German naturalist, Dr. Ludwig Leichhardt, assisted by the liberality of personal friends in Sydney, devoted himself, from 1843 to 1846, to the exploration of Eastern Queensland, from its southern border to the Gulf of Carpentaria. His great journey in 1844, from the upper branches of the Fitzroy River to the head of the gulf, and thence along its western shores to Port Essington, a distance of 3000 miles, was performed in little more than four months, and places Leichhardt in the first rank of Australian explorers. Eager to apply the experience gained during this expedition, he conceived the gigantic project of traversing the entire continent across its centre from east to west. Starting with two years' provisions, and taking with him 450 sheep and goats, 40 bullocks, and 28 horses, he persevered for seven months, when, having lost the whole of the cattle and sheep, he was obliged to return. Not discouraged, he obtained fresh funds, and organised another expedition, but comparatively small and ill provided. He started, however; and a letter received from him while at the Cogoon River, less than 300 miles from Moreton Bay, was the last that was ever heard of the enthusiastic explorer, and his fate remains a mystery to this day. Parties went out in search of him, and trees were found marked L, which were supposed to show his track; but this has been considered unsatisfactory evidence. There can be little doubt that he was murdered by the natives, but where and when will probably never be known.

About the same time Sir Thomas Mitchell was exploring farther to the west, and opened a great deal of fine country in what is now the centre of the colony of Queensland. He here discovered a large river (the

Barcoo), which, after tracing for about 150 miles towards the centre of Australia, he hastily concluded was the same as the Victoria of the north-west coast. His assistant Mr. Kennedy, however, traced it to the south-west and south, till it was swallowed up in the great central desert. In the following year Mr. Kennedy was appointed to explore the country between Rockingham Bay and Cape York, but never reached his destination. He was exposed to numerous attacks of the natives, and was at length killed with most of his party, only one native servant reaching Port Albany.

7. *Gregory in the North-West.*

There was now a lull in actual exploration of the interior for nearly ten years, when it was again energetically taken up, and prosecuted on the whole with wonderful success. During 1855 and 1856 Mr. A. C. Gregory was engaged in exploring the Victoria River of the north-west coast. He traced it first in a south-easterly and then in a southerly direction for a distance of 300 miles, when its course became dry, passing through a sterile desert. Crossing a dividing ridge of hills, a series of pools and dry channels was found named Sturt's Creek, and this was traced several hundred miles to a point in lat. 20° 30′ S. and long. 128° W., where it terminated in a salt lake in the desert.

8. *M'Douall Stuart's Journey across the Continent.*

We now come to one of the greatest and most successful of Australian explorers, John M'Douall Stuart, who, in 1858 and 1859, had examined the whole district of Lakes Eyre, Gardner, and Torrens. On March 2, 1860, he started from Adelaide on a journey across the whole

continent to the north coast. Passing to the west of Lake Eyre, he found a tolerably fertile country till he crossed the Macdonnell Ranges close to the tropic of Capricorn. On April 23d he reached a mountain in S. lat. about 22°, and E. long. nearly 134°, which is said to be the centre of the Australian continent, and has been named Central Mount Stuart. It is, however, very far to the north-west of the true centre, though it is almost exactly midway between the head of the Great Australian Bight and the extreme north coast at Port Essington on Melville Bay. Passing beyond this point about 300 miles, and when less than 200 miles from the Gulf of Carpentaria, he was forced to turn back by the hostility of a numerous tribe of natives. Nothing daunted, on New Year's Day 1861 Mr. Stuart again left Adelaide (aided by a liberal grant from the Colonial Government), and succeeded in reaching, about 100 miles beyond his former position, to lat. 17°, long. 133°; but an impenetrable scrub here barred all farther progress. He made strenuous and prolonged efforts to pass the obstacle, his horses being on one occasion one hundred and six hours without water, but without success, and was reluctantly compelled to return for want of provisions. Arriving safely in the settled districts in September, he again started in less than a month on the route now familiar to him; and this time well-deserved success rewarded him. Leaving the Gulf of Carpentaria far to the right, he found a passage through the scrub, and succeeded in reaching the shores of the Indian Ocean on the west side of Chambers Bay, in July 1862. In December he reached Adelaide in safety, though greatly worn out with exhaustion and scurvy; but neither on this nor on any of his previous journeys did Mr. Stuart lose a single man of his party.

This journey is perhaps the most important in its results of any of those which have been made in the

interior of Australia. It has marked out a track from the settled districts of South Australia to the extreme north, along which it has been found possible to construct a telegraph line, with fixed stations; and it has also led to the discovery of perhaps the most fertile district of tropical Australia, watered by a fine navigable river, the Adelaide, and which, from its position in regard to the islands of the Malay Archipelago, is best fitted to become a flourishing and populous settlement. Mr. Stuart's party consisted of only three persons on his first attempt, and ten on his second and third (successful) exploration.

9. *The Fatal Expedition of Burke and Wills.*

About the same time that M'Douall Stuart commenced his attempt to cross the continent, a great expedition was despatched from Melbourne at the expense of the Victorian Government. It consisted of eighteen persons, several waggons, many pack-horses, and twenty-seven camels imported from India for this special service. Mr. O'Hara Burke was appointed leader, with Mr. W. J. Wills, a young and promising astronomer, as second in command. After much trouble, owing to the unwieldiness of the expedition and the insubordination of some of its members, an advanced party reached Cooper's Creek (the lower course of the Barcoo River), where they formed a depôt and left a detachment in charge of it, while Burke and Wills, with two men, King and Gray, pushed on with one horse and six camels for the Gulf of Carpentaria. The person left in charge of the depôt, named Brahé, received instructions to await their return, or till failure of provisions compelled a retreat. This small party with great difficulty passed the M'Kinlay range of hills, and succeeded in about six weeks in reaching the Gulf of Carpentaria near the mouth of the Flinders River, being

thus actually the first to cross the continent, though on a somewhat shorter route and through much less new country than Stuart. But in this case the result was most disastrous. The homeward journey to the depôt was toilsome and difficult. The camels broke down, and were most of them left behind. The horse was killed for food. One of the party, Gray, died on the march, the other three being so weak that they could hardly dig a grave to bury him; but four days afterwards, with two camels, they succeeded in reaching the depôt. And now occurred one of the most melancholy episodes in the history of Australian exploration. The depôt was reached on the evening of April 21, 1861; while on that very morning Brahé had started homeward, having left what provisions he could spare (but no clothing, tea, or stimulants) with an indication of their position. Burke and Wills were far too weak and exhausted to follow on his track with any chance of success till recruited by rest and food, and the two camels were too ill to travel more than a very few miles a day. After a few days' rest they endeavoured to make their way down Cooper's Creek to Mount Hopeless, where, at a distance of only 150 miles, there was a sheep station; but want of water drove them back, and the camels both broke down and had to be shot. They found friendly natives who supplied them with food, and they discovered the "nardoo" plant, the seeds of which pounded form a kind of native bread. The explorers found it agreeable, but while it satisfied hunger it did not nourish, and they got weaker and weaker. About six weeks after their return to the depôt Burke and Wills both died within a few days of each other, and King joined a party of natives who treated him kindly, and with whom he was found about three months later by Mr. A. W. Howitt, and brought safely home to Melbourne.

After Brahé left the depôt to return, he fell in with

COOPER'S CREEK.

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Wright, who had been left in charge of the remainder of the party. Wright's instructions were to follow on to the depôt at Cooper's Creek, and he appears to have been amply supplied with provisions and stores; yet on meeting Brahé the whole party turned back to the Darling, which they reached on June 18th. Brahé was thence despatched to Melbourne, where he arrived on June 30th, and reported the state of affairs to the committee.

No sooner was it known that the depôt had been deserted and the explorers left to their fate, than four distinct expeditions were organised for the relief of the missing travellers, or the discovery of their remains. Mr. Howitt was sent along their outward track, and, as already stated, rescued the sole survivor. The South Australian Government sent out Mr. J. M'Kinlay from Adelaide, who, after visiting Cooper's Creek, traversed the whole continent to the Albert River at the head of the Gulf of Carpentaria, and thence turning east reached the Burdekin River and Port Denison in Queensland. The Victorian Government also sent an expedition to the north coast, in case the Burke expedition should have been unable to get away from that district. Mr. Landsborough was taken by sea to the Albert River, whence he explored about 200 miles to the south-west, and then in a general south-south-east direction till he reached the Warregoo River, a tributary of the Darling, about 450 miles west of Brisbane. The Queensland Government sent Mr. Walker with a party of native police, from the Nogoa River, 200 miles south-west of Rockhampton, who thence explored in a general north-west direction to the Gulf of Carpentaria. All these expeditions were brought to a successful termination; and they have given us a sufficient general knowledge of the interior of the entire eastern half of Australia, the most important gap being the desert region east of Central

Mount Stuart, and between Sturt's farthest north and Landsborough's farthest south points.

Two other explorations of less extent belong to this period. The first is that of Mr. F. T. Gregory in North-West Australia, in 1861, when he explored about 800 miles of country at an average distance of 200 miles from the coast, about the upper courses of the De Grey, Ashburton, Fortescue, and Oakover Rivers. The other is that of Messrs. Jardine, who, in 1864, explored a new route along the western side of the great northern peninsula from Port Denison to Cape York.

10. *Establishment of the Telegraph Line to the North Coast.*

There was again a lull of several years, during which time the electric telegraph was successfully carried by the South Australian Government, along the track discovered by Stuart from Adelaide to Port Darwin. The establishment of numerous stations along this line, where permanent water and food supplies could be obtained, offered a tempting base of operations for new explorers; and the desire of the colonies of South and West Australia to communicate by an overland route, led to the concentration of their efforts in this direction. Previous to 1872 the entire region between the telegraph line and the settled districts of West Australia was a vast blank covering fully one-third the area of the Australian continent; and wherever it had been touched on or pierced, it had been found to be a waterless waste, though often covered with dense scrub. Eyre had traversed its southern border; Gregory had penetrated from the north to a little beyond lat. 20°; Stuart had explored its south-eastern corners; and Forrest, in 1869, had entered it from the west for a distance of nearly 300 miles; but all alike had been driven back by want of water.

11. *The Western Deserts, traversed by Giles, Warburton, and Forrest.*

In the exploration of this vast unpromising area, the first place is due to Mr. Ernest Giles, who, in 1872, at his own expense, but at the suggestion of Baron Von Müeller, who aided him with pecuniary assistance, started from Chamber's Pillar, near the Charlotte Waters telegraph station, with the intention, if possible, of crossing in a westward direction to the sources of the Murchison River. In this he was not successful; but he discovered the extensive salt lake Amadeus, and explored for about a hundred miles north of it, the whole country being arid, with sandstone ridges and spinifex or mallee scrub. The mountains diminished in height as he proceeded westward. The following year he started again, aided by the South Australian Government, and travelling about 200 miles south of his former course, reached a point nearly midway between the telegraph and the known part of West Australia. Here the country consisted of open sandhills or gravel, covered with spinifex, and absolutely without water. Turning back, he struck due north about a hundred miles, finding only one small water-hole on the way, and then came upon some fine hilly country, with rocky gorges, running streams, a beautiful waterfall, and abundant pasture. Exquisite flowers decked the ground, and the place was an oasis of beauty in the midst of a huge wilderness. But it did not last long. The streams ran dry as soon as they left the shade of the hills, and both north and south there was nothing but parched desert. Packing out water in kegs, he pushed due west, with one companion, for 120 miles over an arid country, when one of the horses breaking down, he was obliged to return. Giving the horse that remained to Gibson, he instructed him to go back to the kegs, 30

miles off, give the horse a good drink, and then push on for the camp, and bring back water, adding, "I depend on you to bring me relief." Gibson lost his way, and was never seen again. Mr. Giles walked on the whole way to the kegs without water. Then, carrying the keg and his other baggage, a load of 50 lbs., he started, and was seven days reaching his depôt, having been without food for five days, and being able to walk only about five or six miles a day. On his return track he passed a range of hills to the south of Lake Amadeus, which lake is probably more than 200 miles long.

While Mr. Giles was thus engaged, several other expeditions had been sent out by the South Australian and West Australian Governments. Mr. Gosse, with camels, horses, and a dray, started in 1873, nearly in the same direction as Mr. Giles, but did not succeed in reaching so far west. He discovered the remarkable Ayer's rock, a pillar or pyramid of granite about 1000 feet high, and not far from it Mount Olga, a precipitous mass of rock two miles long, one mile wide, and more than a quarter of a mile high.

In April 1873 Colonel Egerton Warburton started from Alice Springs (just north of the tropic) with seventeen camels, and succeeded in reaching the Oakover River, in Western Australia, in December, after extreme hardships, with only three of the camels alive. The line of this exploration was about on latitude 21° and 22°, passing a little south of Gregory's farthest point. The country, for the greater part of the distance, was a fearful desert, with not a drop of surface-water for hundreds of miles at a stretch, and in every way inferior to that traversed by Giles. Colonel Warburton was nearly starved on this journey, and part of the time had to travel, strapped at full length, on his camel; but he was the first to traverse the great Australian desert from east to west.

In the following year (1874) a still greater feat was accomplished by Mr. Forrest, who, with horses only, crossed through a longer extent of uninhabited country, from the Murchison River to the telegraph line a little north of Peake station. His route passed close to the point whence Giles and Gosse were turned back in 1873, and he was delayed seventeen days at his last station before reaching it, in endeavouring to find water sufficient to enable him to go on. For two-thirds of the distance across, the country is without permanent water, and thoroughly uninhabitable, though often covered with a scrubby vegetation. Towards the telegraph line, however, it becomes more hilly, and with more frequent streams and water-holes; and there are here and there patches of fertile country.

In 1875 the veteran explorer Giles was furnished with camels and assisted by the South Australian Government, and succeeded in crossing from Port Augusta, at the head of St. Vincent's Gulf, to Perth by an entirely new route, about midway between Forrest's line and the south coast, and nearly following the 30th parallel of south latitude. From the Youldeh Depôt, about 120 miles north of Fowler's Bay, to the first settlements in West Australia, was traversed in little more than four months. After leaving a small native dammed-up pond, in longitude 128° 40′, no water was found for a distance of 325 miles, when a very fine spring was accidentally hit upon among barren sandhills. This probably saved the party from destruction, as it was again 150 miles beyond this before any more water was found. Southward towards the coast the country was open and grassy; northward, mostly covered with scrub and spinifex, but all equally waterless. In this expedition Mr. Giles travelled 2500 miles, and found no country available for settlement; while for more than 1000 miles he had to bore his way through interminable scrubs.

12. *General Result of these Explorations.*

The western half of Australia has thus been traversed in three nearly parallel lines about 300 miles apart; while various shorter explorations have made known large portions of the intermediate country. The southern and northern coasts are also fairly known; and we are forced to conclude that nearly half of the entire continent of Australia is uninhabitable by Europeans. Nowhere else perhaps on the globe do we meet with the strange phenomenon of a dense vegetation combined with an aridity equal to that of the Sahara. For the traveller the country is worse even than the Sahara. For hundreds of miles at a stretch the sandy undulations are covered with the dreaded spinifex, or porcupine grass, which renders it impossible to walk without painful precaution. Again, for hundreds of miles is found the dense scrub of dwarf eucalyptus, covering the ground like the rods of an osier bed, ten or twelve feet high, hindering all view of the country, and rendering it necessary literally to bore one's way, like a mole, underground. Then come acacia scrubs, which add the annoyance of sharp prickles to those of the other kinds. Mr. Giles tells us that horses dread the *Triodia*, or spinifex, like a pestilence. The constant pricking of this grass causes raw and bleeding swellings round their feet; and to escape from it they will prefer to force their way through the densest scrubs, where the ground is soft and the spinifex does not grow. Here they rush along, tearing the coverings off their loads, and frequently forcing sticks between their backs and their saddles; then comes a frantic crashing through the scrub, loads are forced off, and horses are lost sight of, and it may take hours or days to recover them. Nor do the travellers escape; for their clothes get torn and ripped to pieces, and their bodies scratched and often seriously wounded.

Sometimes stinging ants abound to such an extent that the wearied explorer can get no rest. However hot and tired he may be, he dare not lie down in the shade, but must remain exposed to the sun or lie on the heated soil, in order to escape this torment. In other parts the whole country is a mass of angular stones, over which the traveller has to pass for days together, without finding a spot of easier ground; while in some districts loose sand is heaped up in ridges, like the long swell of the ocean, and appearing almost as interminable. Often, after passing days without water, when at length it is discovered, it turns out to be undrinkable brine, or it exists in such small quantity as to be insufficient to supply the wants of both men and horses for a single day. Again, the extreme uncertainty of the climate and rainfall renders it impossible to depend on the accounts of previous explorers in the same district. Where water is at one time abundant and herbage luxuriant, there may be found a year or two later a burnt-up desert. The lake described by one traveller may be found an expanse of baked mud by his successor; while where one marched over grassy plains, another may be stopped by inundations which cover the whole country.

Exploration, for mere discovery's sake, has now done its work in Australia, and the rest may be left to the unaided expansion of agriculture and commerce. So many outlying stations are already occupied, and the overland telegraph affords so admirable a base of operations, that every spot available for settlement will be found and occupied quite as quickly as desirable. The work that has been already done in so inhospitable a country and so trying a climate is little less than marvellous; and the story of Australian exploration, with its episodes of heroism and martyrdom, affords a convincing proof of the undiminished energies of our countrymen in their southern home.

Material Progress of the Australian Colonies.

13. *Growth of the Population.*

While the exploration of Australia has thus rapidly gone on, every available part of the country has been converted to the uses of civilised man, at a rate which has sometimes rivalled that of the Western United States. The progress at first was comparatively slow. In 1788 the first settlement, at Botany Bay, consisted of about 1000 individuals, and in 1835 the entire European population of Australia, with Tasmania, was about 80,000. By 1851 it had increased to 350,000; when the discovery of gold-fields gave an enormous impetus to emigration, and subsequently to agriculture and commerce. The population thence increased with marvellous speed; and at the present time Australia probably contains over 2,000,000 inhabitants, more than two-fifths of which (845,000) are congregated in one of the smallest of the colonies, Victoria; while one-sixth of the whole (340,000) are to be found in the two great cities, Melbourne and Sydney, with their suburbs.

14. *Agriculture.*

An enormous extent of the whole continent is, as has been shown, absolutely uninhabitable, yet over fifty million acres of Crown lands have been sold, equalling about one-fortieth of the entire area of the country. Of this amount about five million acres are actually under cultivation, the rest being devoted to grazing purposes. The great agricultural specialty of Australia is its wool, the produce of about 50 millions of sheep. In 1872 the total produce of wool was 170 million pounds; and its quality is so fine that it realises the highest prices in the

English market, and reaches an annual value of eleven millions sterling.

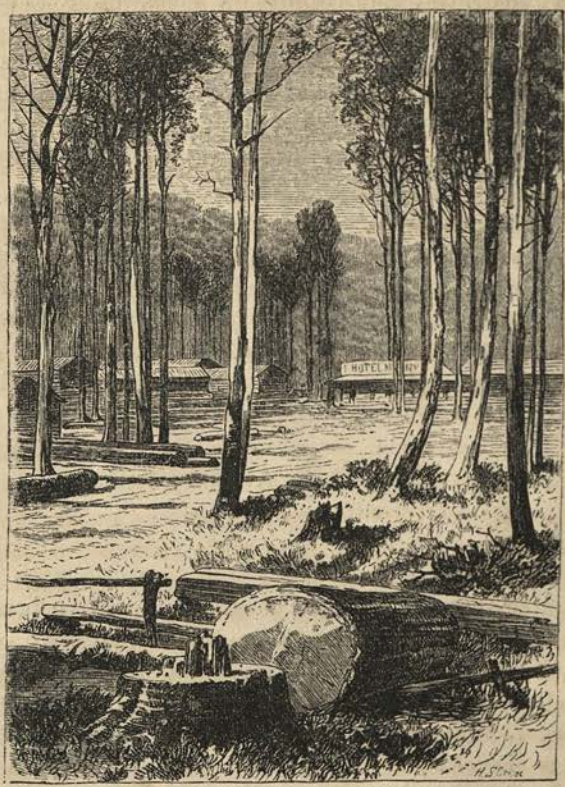
Besides sheep, there are more than six millions of cattle, nearly a million of horses, and half a million of pigs, in Australia; and from these there is a great export of hides, tallow, and preserved meats.

The chief agricultural products are also extensively grown. In 1875 the wheat crop amounted to about 20 million bushels; maize to 4 million bushels; potatoes to 225,000 tons; hay to half a million of tons; while the vineyards produced 2,390,000 gallons of wine. Tobacco and sugar-cane are also extensively grown in suitable parts of the country. The average yield of the various crops per acre was as follows:—Wheat, 14·24 bushels; oats, 29·64 bushels; barley, 24·98 bushels; maize, 28·81 bushels; potatoes, 3·66 tons; hay, 1·27 tons. These averages must, however, be somewhat reduced, as they include New Zealand, where, owing to the more favourable climate, the crops, especially cereals and roots, are considerably finer than in Australia itself.

15. *Mineral Wealth.*

Mining forms one of the most remunerative branches of industry. South Australia contains productive copper mines, New South Wales extensive coal measures, and especially gold. The richest gold-fields, however, are those of Victoria, where there are seven mining districts: Ballarat, Beechworth, Sandhurst, Maryborough, Castlemaine or Bendigo, Ararat, and Gipps Land. Of these the most productive are Ballarat, Sandhurst, and Maryborough. Gold has also been discovered in Queensland, which claims to be as rich in this metal as the sister colonies. Here the principal auriferous region lies in the Peak Downs, though in 1876 rich finds were also made in the neigh-

bourhood of Cooktown. This discovery was followed by a sudden "rush," from which the sanitary state of the place suffered very materially. Many Chinese are also at work on the Australian gold-fields, the productiveness of



SETTLEMENT ON A GOLD-FIELD.

which, however, diminishes from year to year, though many fresh mines have been discovered in Queensland.

Some nine or ten years ago the "diamond fever" began to rage, consequent upon the discovery of a con-

siderable number of diamonds and other precious stones at Mudgee, in New South Wales, and these valuable gems have since been found in Victoria and Queensland.

Tin occurs abundantly in Queensland, and less plentifully in New South Wales, Victoria, and Tasmania. Iron is often plentiful, and there are also mines of antimony, bismuth, cobalt, zinc, and manganese, as well as sulphur and bitumen. Coal is extensively worked in New South Wales, and it is also abundant in Queensland.

The value of the gold obtained at the various Australian gold-fields, from 1851 to the end of 1875, reached the enormous amount of £223,000,000. The extent of the workings in other metalliferous ores may be judged by the fact, that the produce of copper for the year 1876 is valued at nearly £450,000; and that of tin at nearly £600,000; while the annual produce of the coal-fields of New South Wales is over one and a quarter millions of tons.

16. *Commercial Activity.*

The trade of the colonies is already in a very flourishing state, and continually on the increase, so that in this respect Australia takes a foremost position among civilised nations. In 1875 the imports amounted to £39,243,839, and the exports to £38,578,274. If we compare Australia with the Canadian Dominion, as the most extensive of the British colonies, we find that, with a much greater population, the exports of the latter country are considerably lower; so that while Australian exports nearly £20 per head, Canada exports only £4 : 7s. per head. It is true that Australia has gold; but it is equally true that the labour, skill, and energy, represented by each pound's worth of gold obtained from the mines, is nearly equal to that required for the production of any other article of commerce. The shipping belonging to the Australian colonies consists of about 1600 vessels, reach-

ing an aggregate of 220,000 tons; while the inward and outward entries of vessels for the colony of New South Wales amounted, in 1876, to a tonnage of considerably over a million tons each way. The gross revenue of the Australian colonies for the year 1875 amounted to over eleven millions and a quarter sterling.

17. *Railways and Telegraphs.*

Up to the epoch of the gold discovery little had been done towards facilitating internal communication within the several colonies, or between one colony and another, and much loss and suffering resulted from the absence of roads from the great seaports to the interior. Excellent roads now traverse most of the colonies, connecting all the chief towns with their respective capitals; the navigable rivers are covered with steamers, and a system of railways is rapidly being extended over the more populous portions of the country. In the year 1875 there were in Australia and Tasmania 1781 miles of railroad already constructed, and 954 miles in progress; while the electric telegraph has received a still greater proportionate development, no less than 19,663 miles having been constructed, to which 3998 miles, then making, are probably now to be added. All the colonies are now linked to each other, to New Zealand, and, by the overland telegraph, with the mother-country *vid* Java and India. Several magnificent lines of steamers keep up frequent communication with Europe and America, by the Atlantic, Pacific, or Suez Canal routes; while others connect the several colonies with each other, with New Zealand, and with the Fiji Islands and New Caledonia. Throughout all the colonies a postal system, modelled on that of Great Britain, is in full operation, the inland postage being generally 2d., while money-order offices and postal savings-banks are scattered abundantly over the remotest parts of the interior.

NEW SOUTH WALES.

London: Edward Stanford, 55 Charing Cross.

CHAPTER VII.

THE COLONY OF NEW SOUTH WALES.

1. *Origin, Geographical Limits, and Area.*

Of all the Australian colonies the oldest is New South Wales, it having been settled in 1788; and, till West Australia was established in 1829, it included all the English settlements in the country. It was originally much more extensive than it is now, including much of Victoria and Queensland, which were separated from it in 1851.

New South Wales now contains an area of 323,437 square miles, lying within the limits of 28° and 37° south latitude, and between the meridians of 141° and 154° east longitude. Its greatest length is 900 miles, with an average of 500, while its greatest breadth is 850 miles, also with an average of 500. Its area in acres is 206,999,680, or about five times that of England and Wales, and more than half as large again as France. It is bounded on the north by Queensland, from which it is separated by Macpherson's Range, the Dividing Range, and the Dumaresq River; on the east by the Pacific Ocean; on the south by Victoria, from which it is separated by the river Murray, as far as its source, and thence by a straight line to Cape Howe; while on the west the meridian of 141° E. separates it from South Australia. In general form it is a quadrangle, of which the eastern side is much longer than the western.

2. *Physical Features.*

The surface of this colony is greatly diversified. A range of mountains runs parallel to the coast at an average distance of about thirty miles from it. The country on the eastern side of this range is an undulating plain intersected by numerous streams. On the west of the mountains is a considerable breadth of elevated table-lands, which farther west sinks into vast plains. The coast district has a fertile soil, and is by far the most populous. Its rivers periodically overflow their banks, and cover the adjacent plains with a rich alluvial deposit that is excessively fertile, so that crops can be produced on the same land year after year without manure. Beyond are table-lands, furrowed here and there with precipitous valleys, and surmounted by several groups and ranges of mountain heights. Farther west the land gradually sinks to the great inland plains which form the chief pasture-lands of the colony.

The mountains of New South Wales cover a wide extent of country, though their elevation is not great. Far in the interior, near the western boundary of the colony, are the Grey and Stanley Ranges, the loftiest elevations being Mount Arrowsmith and Mount Lyell, each about 2000 feet high. These form the western watershed of the Darling valley, though, as is so frequently the case in Australia, many of the streams dry up as soon as they quit the mountains. The great Dividing Range runs in a general direction from N.N.E. to S.S.W., and is very broad. It consists of seven main divisions—(1) The New England Range, on the north-east, culminates in Ben Lomond, 5000 feet high; (2) the Liverpool Range, south of the last, and extending in a westerly direction, reaches a height of 4500 feet in Oxley's Peak; (3) the Blue Mountain Range, to the west of Sydney, and which

long formed an impassable barrier to the interior, only reaches a height of 4100 feet. Then follow (4) the Cullarin, (5) the Gooruck, and (6) the Manero Ranges, all about the same height; while (7) the Muniong or Warragong Range, forming the northern extension of the Australian Alps of Victoria, culminates in Mount Kosciusko, whose summit (7308 feet high), although below the actual snow-line for the latitude, usually retains some patches of snow throughout the year. Farther to the east lie the Coast Ranges, generally forming the edge of a tableland upon which the dividing chain is based. The northern Coast Range reaches a height of 6000 feet at Mount Seaview, and the southern culminates in Mount Budawung, at an elevation of 3800 feet. There are also many isolated mountains, which reach a considerable altitude.

As already stated, the western parts of the colony consist of immense level plains. The principal of these are the Liverpool Plains, in the northern part of the country, situated between the Liverpool and Hardwick Ranges. They cover an area of about 17,000 square miles, and are supposed to have once formed the bed of a vast inland lake, the hills or ridges of sandstone or basalt rising from them like islands. They are but scantily watered, and are therefore only suitable for pasturage. Another extensive series of plains is known as the Manaroo Plains or Brisbane Downs, situated in the southern part of the colony, near the sources of the Murrumbidgee River. They form an undulating plateau of rich and fertile soil, about 2000 feet above the sea, and extending for a length of seventy miles.

All the rivers of New South Wales take their rise in the great Dividing Range, or in some portion of its northern or southern extensions; and they may be divided into two great groups—those which flow eastward into the ocean, and those that flow westward, and ultimately join

the Murray River, or some of its numerous tributaries. The eastern rivers have comparatively short courses, the largest, the Hawkesbury, being only 330 miles long. They flow rapidly in deep channels, varying greatly in volume, and are subject to great and sudden floods. Several of them are partially navigable for vessels of light draught, but their entrances from the ocean are usually difficult and dangerous. Those which exceed a hundred miles in length are, the Hawkesbury, the Hunter, the Shoalhaven, the Clarence, the Macleay, the Richmond, and the Manning. The great rivers flowing west are the Darling, the Lachlan, the Murrumbidgee, and the Murray, with many tributary streams. The approximate length of the Darling, the largest and most westerly of these rivers, is about 850 miles, without taking account of its innumerable smaller windings; but its numerous tributaries, spreading out like a fan over the northern half of the colony, drain an area of 198,000 square miles. Next comes the Lachlan, whose sources approach within sixty miles of the east coast, and which has a course about 500 miles in length. Farther south the Murrumbidgee sends its branches to the east of the Australian Alps till its sources in the Gooruck Range are only thirty miles from the coast. The Murray itself, which forms the southern boundary of the colony, rises near Mount Kosciusko in the Muniong Range of the Australian Alps. These rivers are all navigated at certain seasons by small steamers, which reach Albury on the Murray, Wagga Wagga on the Murrumbidgee, and Fort Bourke on the Darling. No less than seven tributaries of these rivers are from 350 to 750 miles long, the largest of these, the Macquarie, passing by Bathurst 122 miles west of Sydney.

The coast-line of New South Wales, although almost straight in general outline, is broken up in detail so as to present a number of important capes and headlands, and

ENTRANCE TO PORT JACKSON.

To face page 137.

many remarkable bays and inlets; Port Jackson being one of the safest, deepest, and finest harbours in the world. The lakes are really of little importance, although Lake George, situated on a table-land of the Dividing Range at an elevation of 2129 feet, makes an imposing appearance on the map, being 25 miles long by 8 miles wide. It is, however, very shallow, and at intervals of a number of years altogether dries up, so that cattle can pasture all over it. Having no outlet, it has saline deposits which render its water undrinkable. Lake Bathurst is a smaller lake in the vicinity; and the only other lakes are in the lowlands, and are rather depressions subject to being filled by floods than true lakes.

The scenery of New South Wales cannot, on the whole, be termed beautiful, owing to the monotony of the vegetation, the vastness of the plains, and the frequent aridity of extensive areas, yet it contains certain features of remarkable beauty. First among these stands Port Jackson, the harbour of Sydney, which for variety, extent, and picturesque combinations, rivals, if it does not surpass, the celebrated harbour of Rio de Janeiro. Mr. Anthony Trollope—a man not given to enthusiastic praise—speaks of it as "so inexpressibly lovely that it makes a man ask himself whether it would not be worth his while to move his household gods to the eastern coast of Australia, in order that he might look on it as long as he can look at anything." Some of the estates and pleasure-grounds on its shores, he adds, are perfect. They leave nothing for the imagination to add. Less known, but almost equally remarkable, is the scenery of the Hawkesbury River, which surpasses in natural beauty the finest parts of the Rhine. Govat's Leap, on the route from Sydney to Bathurst, is a ravine or chasm of unsurpassed grandeur, and it possesses a waterfall superior to the Staubbach. The district of Illawarra, about 40 miles south of Sydney, is remarkable for

its picturesqueness in rock and ravine, and the almost tropical luxuriance of its vegetation; while many parts of the mountain ranges are grand and imposing.

3. *Climate, Natural History, and Geology.*

The climate of New South Wales has already been sufficiently described in our account of the climate of Australia generally. It varies greatly according to latitude and distance from the sea. The interior plains are excessively dry, while the coast districts have abundant rains. The winters are very mild; and, though the summer heats are great, sunstrokes are far less numerous than in the United States. The hot winds of the warm season are annoying, but do not appear to be unhealthy; while storms and electrical disturbances are comparatively rare.

New South Wales exhibits in perfection the special flora and fauna of Eastern as contrasted with Western Australia. The beautiful genus epacris, the representative of the heath tribe in Australia, is especially abundant, as are the acacias and the eucalypti, or gum trees. Among native Australian animals kangaroos of various species still abound, together with bandicoots, wombats, native opossums, and the koala, or native bear, as well as the curious duck-billed platypus. Birds are numerous and varied, and the larger part of the Australian fauna is well represented, while many remarkable species are almost peculiar to this colony and Queensland. Such are the beautiful and unique lyre-bird (*Menura superba*), the gorgeously-coloured ground-thrush (*Pitta strepitans*), the curious bower-birds, the golden *Sericulus aureus*, the large cuckoo-like *Scythrops*, the fine crested pigeon (*Lopholaimus antarcticus*), the brush-turkey (*Talegalla lathami*), and many others. To give any adequate picture of the

natural history of this colony, it would be necessary to enumerate almost all the peculiar Australian groups, because almost all are here represented. The reader is therefore referred back to the third chapter of this volume for further details on this subject.

Geology.—The mountain ridges and table-lands of New South Wales consist mainly of the older Palæozoic formations, pierced and rent by intrusive igneous rocks of various ages. The older settled districts of the east coast lie mostly on rocks of the carboniferous formation, or on newer deposits of Mesozoic age; while the great western plains and valleys are almost wholly Tertiary sandstone, or more recent deposits, with intervening areas covered by overflows of igneous trap rock. The oldest sedimentary rocks are Silurian, consisting of crystalline sandstones and limestones. Their strike is in a meridional direction, and the quartz veins, or "reefs" as they are locally termed, running north and south for miles, serve as a guide to the wandering bushman.

These Silurian rocks form the bed on which the gold-bearing gravels are deposited, while its quartz veins or reefs form the matrix from which the gold of the drifts has been derived. These reefs are worked by means of deep mines, and furnish the larger part of the gold now procured. Granitic rocks of various kinds are abundant, and are believed to be generally of later date than the Palæozoic rocks. Syenite forms the summit of Kosciusko, the highest mountain in the colony and in Australia. Gold occurs in granite, both in quartz veins and in beds of iron pyrites; while the tin of New England is all derived from granite.

The carboniferous rocks cover an immense area, and are largely coal-bearing, so that the coal-fields of New South Wales are among the most extensive in the world. These deposits were once thought to belong to the

Secondary formation, but they are now ascertained to be Palæozoic, and to correspond to the true coal of Britain. Cannel coal and mineral oils are also produced by these carboniferous rocks. The Secondary formation is scantily represented by small patches of trias at the Clarence River, and by some coal-bearing beds near Paramatta.

Tertiary deposits are almost unknown in the east, while to the west of the Dividing Range they cover enormous areas, forming in many places ranges of flat-topped sandstone hills, There are also immense deposits of sands, gravels, marls, and clays, of late Tertiary or Post-tertiary age; and these descend far below the present level of the country, as shown by a well sunk at Billebong, on a tributary of the Lachlan River, which passed for 160 feet through such deposits without reaching any older rocks. More recent still are the deposits of drift and boulders, with the red earth deposited in caves, which has yielded abundance of remarkable fossils, as already described in our account of the geology of Australia.

Igneous rocks occur abundantly, and of all ages, from the basalt of the Palæozoic formation to the products of volcanoes of Post-tertiary age. In the southern part of the Dividing Range columnar basalt is abundant, and is found as high as 5000 feet above the sea. Greenstone dykes cut through granite at Naas Valley, and alter sandstone to quartzite at Mount Tennant. Trachyte crowns the summit of Mount Lindesay. Igneous dykes at Illawarra, Murrundi, and other places, have changed coal into coke. Great outflows of basalt occur at most of the gold-fields. Volcanic ashes are found at Mount Lindesay. The number of true volcanic cones and craters is much fewer than in Victoria, nor are there any so perfect. No active volcano is known to exist in the colony.

4. *Colonisation, Population, etc.*

Originating as a penal settlement at Botany Bay in 1788, the colony at first made little progress, so that in 1825 the total population was only 33,675. In the next nine years it nearly doubled, being 66,212 in 1834; but fully one-third of this number were convicts. The early governors were often despotic, and persons were liable to disabilities, and even to prosecution for the too free expression of their religious or political opinions. In 1836, however, all such disabilities were abolished, the immigration of free settlers was encouraged, and the country rapidly increased in prosperity. In 1840 transportation was abolished, at which time the population had reached 129,463. In 1850 it was 265,503; and the following year Victoria was established as a separate colony taking away more than a fourth part of the total population. The gold discoveries at this time diverted the stream of emigration to Melbourne, and it took four years to bring up the numbers of the population to that of the date of separation. Notwithstanding the rivalry of the sister colony, and the superior attraction of its gold-fields, New South Wales continued to increase; and although in 1859 Queensland was taken from it, with 28,000 inhabitants, its population immediately afterwards, in 1860, was 348,546. This has since increased with almost equal rapidity, and at the last estimate, at the end of 1876, amounted to 629,776. Besides the colonies which have been actually separated from New South Wales, it has sent considerable portions of its population to the newer settlements in South Australia and New Zealand, standing in some respects in the place of a mother country to all the other Australian colonies. When this is taken into account, the steady growth of its population must be considered as highly satisfactory. There is no such mixture

of races here as in some of the other colonies. The Chinese number about 7000 or 8000, many of whom are market gardeners or domestic servants. Polynesians have been introduced as labourers, but the experiment was unsuccessful, and there are at present very few in the colony. The indigenous inhabitants are few in number, and are rapidly dying out.

5. *Productions, Trade, Shipping, etc.*

The great staple productions of New South Wales are wool, gold, and coal; and in the first and last it is pre-eminent over all the other colonies. In 1875 the number of sheep was 19,249,658, very nearly equal to the number in all the rest of Australia. The wool of New South Wales is perhaps the finest in the world, the choicest breeds of Europe having been introduced; while the dry climate, the peculiar vegetation, the genial temperature, and the absence of beasts of prey, all favour its development. In 1829 only 71,299 lbs. of wool were exported, while in 1876 it reached the enormous amount of 100,736,330 lbs., an increase of a thousand-fold in forty-seven years. Accessory products are tallow, skins, and preserved meat. In 1872 the export of tallow was 185,233 cwt., more than 300,000 sheep being boiled down to produce it. Hides and leather in the same year realised £239,769. Meat-preserving was commenced only in 1862 by salting; the tinning process only began in 1866, and the freezing still later. The total exports of wool, tallow, meat, and live stock in 1871 amounted to £8,598,633.

The devotion to pastoral pursuits implied by these large figures has led to the comparative neglect of agriculture, so that the colony still imports flour to supplement its own wheat crop. This, however, is partly due to the

population entirely subsisting on wheat flour, while the country is better adapted to the growth of maize, which is actually produced in much greater quantity, but is only used as food for cattle, horses, and pigs. Tobacco, sugar, and wine, are also produced in considerable quantities; and these articles will probably soon show a great increase, as the climate and soil seem eminently adapted to them all. It 1876, 4700 tons of sugar were produced, and 451,000 gallons of wine. The climate is equally suitable to sericulture, and silk will soon be added to the exports from New South Wales.

Gold was found at Port Macquarie as early as 1840, and subsequently at several other places, but the first "gold-field" was announced in 1851 at Ophir, on Summerhill Creek, not far from Bathurst. Almost immediately other gold-fields were discovered all along the great central range of mountains, and a period of the wildest excitement followed. There are now about eighty gold-fields in the colony, giving employment to 22,000 miners. In 1852, 962,873 ounces were produced, and the yield has never since been so high. In 1873 it was 328,000 ounces. In 1871 there were in the colony 250 puddling machines, 22 hydraulic hoses, and 80 crushing machines; and the total yield of gold in the twenty years since 1851 has reached the value of 40 millions sterling. The gold fields are most numerous and productive in the western districts.

Copper is found abundantly in the Orange district, Monaro, and several other localities, but is not yet extensively worked. Silver-lead is found on the Yass River, in the basin of the Upper Murrumbidgee and in other places, and cinnabar has been raised near the Cudgegong River. Iron is abundant, but is not much worked owing to the cost of carriage. The Fitzroy mine on the Nattai River, in Camden County, has, however, been sold for

£60,000. Tin has recently been worked in New England, near the Queensland border, and has proved very rich, and in 1873 £114,000 worth was exported. Diamonds are found in the tin streams, and in some places they average six to each ton of wash-dirt.

The most really valuable of all the mineral products of New South Wales is undoubtedly the coal, which occurs in great profusion and of excellent quality, is capable of vast extension, and is the needful basis of so many other industries. The coal-fields extend over an area of ten million acres, and in 1875 the coal raised was 1,253,475 tons. There are also vast deposits of kerosine shale at Maitland and in the Illawarra district, and £13,000 worth was raised in 1875. Plumbago and mereschaum have also been discovered; while limestone, slate, and granite are abundant.

The only manufactured articles exported from New South Wales appear to be cheese and butter, sugar, tallow, preserved meats, and wine. In the year 1876 the exports to the United Kingdom amounted to £5,918,187; but the total exports were £13,003,941, there being a very large trade with the other colonies of Australia, as well as with India and foreign countries.

The shipping consists largely of steamers plying along the coasts and up the rivers. The number of vessels registered in New South Wales is 573, with an aggregate measurement of 72,112 tons. Sixty vessels of 3465 tons were built in 1876. There is a considerable trade between Sydney and the South Sea Islands, as well as with the Sandwich Islands and California.

6. *Roads, Railways, and Telegraphs.*

Compared with the vast extent of the colony and the energy of its people, the roads seem exceedingly deficient.

There were in 1873 only 604 miles of properly constructed roads, almost all of which were in the vicinity of the towns, and in addition 1255 miles in process of construction, most of which had then been simply cleared of forest. Long journeys are made over these cleared tracks with tolerable speed and regularity in dry weather; but where there is much traffic these roads become a succession of mud-holes in the wet season, and where possible détours have to be made through the uncleared ground. Regular stage coaches travel along these roads by day and night, passing in and out through the trees, up and down across the creeks, sticking here and there in the mud, and sometimes upsetting, in which case the passengers often have to pass the night in the bush as best they can. The average pace of such coaches is about six miles an hour. The deficiency of roads is due in part to the high price of labour, and in part to the vast distances to be traversed in every direction. It must be considered also that, till the gold discoveries in 1851, the country was too thinly peopled and the revenue too small to admit of much expenditure on roads; and during the excitement of the gold-fever, it was found that an enormous traffic could be maintained to the remotest diggings often without any roads at all. Just at that time too the Government had begun to construct railways, and in these a large amount of capital has been invested.

The first railway was commenced in 1850, and by the end of 1875, 437 miles were in operation, having been constructed at a cost of over £7,000,000. To the end of 1876, 509 miles were open, and 180 miles more were under contract to be completed during 1877. The net earnings of these lines produced 4⅓ per cent on the capital expended. The most important line is that in a south-west direction from Sydney through Goulburn to Wagga Wagga at the head of the Murrumbidgee naviga-

tion, with a continuation to Albury on the Victorian frontier which will complete the railway communication between Sydney and Melbourne. Another line runs from Sydney across the Blue Mountains to Bathurst, with extensions to Blayney and Orange at heights of more than 2800 feet above the sea. In the north there is a line from Newcastle to Murrurundi, now being extended to Tamworth on the Peel River, in a fine pastoral, agricultural, and mining district. This is intended to be continued by a narrow-gauge line (3 ft. 6 in.) through the table-land of New England to the Clarence River, to meet a line of corresponding gauge in Queensland. Lines are also projected from Tamworth to Tenterfield (220 miles) *viâ* Barraba, Bundarra, and Wellingrove; and from Wagga Wagga to Deniliquin (142 miles), whence a line is already constructed to Echuca on the Victorian frontier; as well as several others both along the coast and inland. The gauge of all the great lines is 4 feet $8\frac{1}{2}$ inches, like that of the British railways. The trunk line from Sydney to Paramatta (14 miles) is double, but from this point the western and southern extensions are single lines. The western line over the Blue Mountains was a great feat of engineering, as there is only one available route, and the line has to be zigzagged up and down, with gradients sometimes of 1 in 30; and is often carried along the face of precipices, necessitating countless bridges, viaducts, and tunnels.

The electric telegraph is also well developed in New South Wales, 8472 miles having been constructed up to the end of 1876. It extends to every important place in the colony, and there are 154 telegraph stations. There is also communication with Victoria and South Australia, and a submarine cable to New Zealand. Colonial telegrams are charged 6d. for ten words; to other Australian colonies, 2s. A telegram can also be

forwarded from Sydney to London, *vid* Port Darwin, at the rate of 10s. 8d. per word.

7. *Political and Civil Divisions.*

The first-settled portion of New South Wales was divided into twenty counties, containing about a million acres each, and being generally about 40 miles in width by 60 or 70 in length. Nearly a hundred other counties have since been formed, some of which are considerably larger, and there is a portion of the Riverina and Albert districts in the west still undivided. Those portions of the country beyond the original twenty counties are divided into thirteen pastoral districts as follows: ALBERT, comprising the extreme north-western portion of the colony, and consisting for the most part of arid plains in which the streams from the mountain ranges lose themselves. It has an area of about 60,000 square miles. WARREGO, in the north, has an area of about 10,000 square miles. CLARENCE in the extreme north-east, contains about 5000 square miles. MACLEAY, on the north-east coast, is small, containing only 3180 square miles. NEW ENGLAND, in the north, is a fine and varied table-land containing 13,100 square miles. BLIGH, in the upper valley of the Macquarie River, has 7800 square miles. LIVERPOOL PLAINS, more to the north, has an area of 16,910 square miles. GWYDIR, on the northern boundary, has 11,075 square miles. WELLINGTON, to the west of the Macquarie River, has an area of 16,695 square miles. LACHLAN, in the south-west, has an area of 22,800 square miles. MURRUMBIDGEE, on the southern boundary, has 26,897 square miles. DARLING, in the south-western corner of the colony, extends to 50,000 square miles. MONARO is a high table-land in the south, and not far from the east coast. It contains 8335 square miles.

The counties being so numerous, it will be most convenient to give them in alphabetical order, adding the general position and the names of two of the adjacent counties. This will enable our readers easily to find any county on the map, and thus more readily discover any town or place which they know to be situated in a certain county.

List of Counties in New South Wales.

1. ARGYLE. South-east. Joins Murray and St. Vincent counties Chief town, Goulburn.
2. ARRAWATTA. North-east, on the Queensland boundary. Joins Stapylton and Burnett counties.
3. ASHBURNHAM. Central. Joins Cunningham and Bathurst counties, and is bounded on the south by the Lachlan river.
4. AUCKLAND. South-east corner of the colony. Chief town, Eden.
5. BARADINE. North central. Joins Leichardt and White counties, and is bounded on the north by the Peel river.
6. BATHURST. East central. Joins Roxburgh and Georgiana counties, and is bounded on the south by the Upper Lachlan river. Chief town, Bathurst.
7. BENARBA. North, on Queensland boundary. Joins Stapylton and Finch counties.
8. BERESFORD. South-east. Joins Dampier and Wallace counties; contains the Maneroo plains and sources of the Murrumbidgee river.
9. BLIGH. Central. Joins Lincoln and Phillip counties, and has the Liverpool range on the north.
10. BLAXLAND. Central. Joins Dowling and Frankland counties, and lies on the north bank of the Lachlan river.
11. BLAND. South central. Joins Monteagle and Bourke counties, and is about 200 miles west of Sydney.
12. BOURKE. South. Joins Clarendon and Mitchell counties, and is bounded on the south by the Murrumbidgee river.
13. BOYD. South. Joins Waradgery and Urana counties, and is bounded on the north by the Murrumbidgee river.
14. BRISBANE. East central. Joins Hunter and Phillip counties, and is bounded on the north by the Liverpool range of mountains.
15. BUCCLEUCH. South-east. Joins Cowley and Winyard coun-

ties. Is bounded on the north by the Murrumbidgee, and is traversed by the Timul range, an extension of the Australian Alps.

16. BUCKLAND. East central. Joins Pottinger and Brisbane counties, and lies in the angle between the Liverpool and Peel ranges.
17. BULLER. North-east, on Queensland boundary. Contains the sources of the Richmond and Clarence rivers.
18. BURNETT. North-east. Joins Arawatta and Murchison counties. Lies about 150 miles from the coast and 30 from the Queensland boundary.
19. CADELL. South. On Victoria boundary, midway between Albury and the mouth of the Lachlan river.
20. CAIRA. South-west. At the junction of the Lachlan and Murray rivers.
21. CAMBELEGO. North-central. Joins Gregory and Cowper, and is bounded on the east by the Bogan river.
22. CAMDEN. South-central, on coast. Chief towns, Camden and Picton. Traversed by the southern railway from Sydney.
23. CLARENCE. North, on coast. Traversed by the Clarence river. Chief town, Grafton.
24. CLARENDON. South. Joins Winyard and Bourke counties. Bounded on the south by the Murrumbidgee river, and traversed by the southern railway from Sydney to Wagga Wagga.
25. CLARKE. North-east. Joins Gresham and Sandon counties. Situated in New England, 50 miles from the coast.
26. CLIVE. North-east, on Queensland boundary, 80 miles from the coast.
27. CLYDE. North. Joins Narran and Cooper counties, and is situated in the angle between the Bogan and Darling rivers.
28. COOK. East. Joins Cumberland and Westmoreland. Bounded on the west by the Blue Mountains, and traversed by the western railway from Sydney.
29. COOPER. South. Joins Bourke and Boyd counties. Bounded on the south by the Murrumbidgee river, and is about 300 miles W.S.W. from Sydney.
30. COURALLIE. North. Joins Stapylton and Benarba counties. Traversed by the Gwydir river, a branch of the Upper Darling.
31. COWLEY. South-east. Joins Murray and Beresford counties. Traversed by the Upper Murrumbidgee river, and about 170 miles south-west of Sydney.

32. COWPER. North-central. Joins Clyde and Yanda counties, and is situated south of the Bogan and Darling rivers.
33. CUMBERLAND. South-central, on coast. Chief town, Sydney.
34. CUNNINGHAM. Central. Joins Kennedy and Gipps counties. Bounded on the south by the Lachlan river, and is about 200 miles W.N.W. of Sydney.
35. DAMPIER. South, on coast. Bounded on the west by the Gourock range of mountains.
36. DARLING. North-east. Joins Hardinge and Inglis counties. Bounded on the north by the Hardwicke mountains, and contains the northern sources of the Peel river.
37. DENHAM. North. Joins Finch and Benarba counties, and is situated in the angle between the Peel and Darling rivers.
38. DENISON. South, on Victoria boundary, midway between Albury and Echuca.
39. DOWLING. South-central. Joins Blaxland and Gipps counties, and is bounded on the north by the Lachlan river.
40. DRAKE. North of New England, close to Queensland. Traversed by the Clarence river.
41. DUDLEY. North of Port Macquarie, on coast. Traversed by the Macleay river.
42. DURHAM. East. Joins Gloucester and Northumberland. Bounded on west and south by the Hunter river.
43. EWENMAR. Central. Joins Lincoln and Oxley counties. Situated between the Macquarie and Castlereagh rivers.
44. FINCH. North-central, on Queensland boundary, west of the Darling river.
45. FITZROY. North, on coast, a little south of the Clarence river.
46. FLINDERS. Central. Joins Oxley and Cunningham counties, and is bounded on the east by the Bogan river.
47. FORBES. South-central. Joins Bathurst and Gipps counties, and is bounded on the north by the Lachlan river.
48. FRANKLIN. West-central. Joins Blaxland and Waljeers counties, and is situated on the north-west bank of the Lower Lachlan river.
49. GEORGIANA. East. Joins Westmoreland and Argyle. Bounded on the east by the Blue Mountains, and on the west by the upper part of the Lachlan river.
50. GIPPS. Central. Joins Cunningham and Bland counties, and is bounded on the north by the Lachlan river.
51. GLOUCESTER. Central, on coast, and extends from the mouth of the Hunter to the Manning river.

52. GORDON. Central. Joins Lincoln and Ashburnham. Bounded on the north by the upper course of the Macquarie river.
53. GOUGH. North-east, in New England. Joins Clive and Hardinge counties. Contains the sources of the Severn and Macintyre rivers.
54. GOULBURN. South, on Victoria boundary, at the head of the Murray navigation.
55. GOWEN. Central. Joins Lincoln and Napier counties. Lies south of the Arbuthnot range, and west of the sources of the Castlereagh river.
56. GREGORY. North-central. Joins Leichardt and Cambellego counties, and is traversed by the lower part of the Macquarie river.
57. GRESHAM. North-east, in New England, near the coast. Is traversed by the southern feeders of the Clarence river.
58. GUNDERBOOKA. North-west, on Queensland boundary, north of the Darling and east of the Warrego rivers.
59. HARDEN. South-east. Joins King and Clarendon counties, and is traversed by the southern railway from Sydney to Wagga Wagga.
60. HARDINGE. North-east. Joins Gough and Murchison counties. Situated west of the Dividing Range, and contains the sources of the Gwydir river.
61. HAWES. East. Joins Macquarie and Durham counties. Contains the northern sources of the Manning river.
62. HUME. South, on Victoria boundary, west of Albury, on the Murray.
63. HUNTER. East. Joins Northumberland and Cook counties. Bounded by the Goulburn and Hunter rivers on the north.
64. INGLIS. North-east. Joins Darling and Parry counties. Situated west of the Darling range, and north of the Peel river.
65. JAMISON. North. Joins Courallie and Durham. Situated on the north bank of the Peel river.
66. KENNEDY. Central. Joins Narromie and Cunningham counties. Bounded on the north by the upper course of the Bogan river.
67. KILLARA. North-west. Joins Rankin and Young counties, and is situated on the west side of the Darling, about 250 miles from its mouth.
68. KING. South-east. Joins Georgiana and Murray counties. Contains the sources of the Lachlan river, and is traversed by the southern railway from Sydney.

69. LANDSBOROUGH. North-west. Joins Yanda and Rankin counties. Situated to the north-west of the Darling river, near the northern boundary of the colony.
70. LEICHARDT. North-central. Joins Gregory and Baradine counties. Is traversed by the lower portion of the Castlereagh river.
71. LINCOLN. Central. Joins Napier and Gordon counties, and situated between the Macquarie and Castlereagh rivers.
72. LIVINGSTONE. West. Joins Menindee and Werunda counties. Situated on the east bank of the Darling, about 150 miles from its mouth.
73. MACQUARIE. North-central, on coast; extending between the mouths of the Manning and Macleay rivers.
74. MENINDEE. West, on South Australian boundary. Situated on the west bank of the Darling and south of the Stanley ranges.
75. MITCHELL. South. Joins Urana and Winyard counties. Situated on the south bank of the Murrumbidgee to the west of Wagga Wagga.
76. MONTEAGLE. South-central. Joins King and Bland counties, and is about 160 miles west of Sydney.
77. MURCHISON. North-east. Joins Burnett and Darling counties, and is bounded on the south by the Hardwicke mountains.
78. MURRAY. South-east. Joins St. Vincent and Cowley counties. Situated on the west side of the Upper Shoalhaven river, and contains Lake George and part of the Gourock range.
79. NANDENAR. North-east. Joins Jamison and Murchison counties, and situated on the north-eastern side of the Peel river.
80. NAPIER. Central. Joins Bligh and Lincoln counties, and situated on the east side of the upper Castlereagh river.
81. NARRAN. North-central, on Queensland boundary, between the head waters of the Culgoa and Narran rivers.
82. NARROMIE. Central. Joins Oxley and Gordon counties. Bounded on the east by the Hervey range, and on the south by the Upper Bogan river.
83. NICHOLSON. South-west. Joins Dowling and Franklin counties, and situated to the south of the Lachlan river, about 150 miles from its mouth.
84. NORTHUMBERLAND. Central, on coast. Chief towns, Newcastle and West Maitland.
85. OXLEY. Central. Joins Ewenmar and Flinders counties. Lies between the Bogan and Macquarie rivers.
86. PARRY. North-east. Joins Vernon and Buckland counties.

Lies north of the Liverpool and Peel ranges, and contains the sources of the Peel river.

87. PERRY. West. Joins Wentworth and Windeyer counties. Lies on the east bank of the Darling, near its mouth.

88. PHILLIP. East-central. Joins Hunter and Wellington counties. Lies south of the Upper Goulburn river, and is traversed by a north-western extension of the Blue Mountains.

89. POTTINGER. North-central. Joins Buckland and Napier counties. Lies to the south-west of the upper Peel river, and contains the southern portion of the Liverpool Plains.

90. RALEIGH. North, on coast, and is bounded on the south by the Bellenger river.

91. RANKIN. North-west. Joins Killara and Landsborough counties, and is bounded on the north-west by the Darling river.

92. RICHMOND. North, on coast. Bounded on the north by the Richmond river.

93. ROUS. North-east corner of the colony. Bounded on the south by the Richmond river.

94. ROXBURGH. East-central. Joins Wellington and Bathurst counties. Lies west of the Blue Mountains, and is traversed by the western railway from Sydney to Bathurst.

95. ST. VINCENT. South, on coast. Bounded on the north and west by the Shoalhaven river.

96. SANDON. North-east. Joins Rayleigh and Hardinge counties. Bounded on the north by the Macleay range, and contains the chief sources of the Macleay river.

97. SELWYN. South-east, on Victoria boundary. Lies west of the Australian Alps, and contains some of the sources of the Murray river.

98. STAPYLTON. North, on Queensland boundary, at the junction of the Dumaresq and Macintyre rivers.

99. STURT. South-west. Joins Nicholson and Waradgery counties. Lies north of the Murrumbidgee, about 100 miles from its mouth.

100. TAILA. South-west, on Victoria boundary, just below the confluence of the Lachlan and Murray rivers.

101. TARA. South-west corner of the colony, on the Murray river, below the confluence of the Darling.

102. TOWNSEND. South, on Victoria boundary, midway between the coast and the western boundary of the colony. Chief town, Deniliquin.

103. URANA. South. Joins Denison and Hume counties, and

situated in the great plain between the Murrumbidgee and Murray rivers.

104. VERNON. East. Joins Sandon and Dudley counties, and lies 200 miles north of Sydney, and 50 miles inland.

105. WAKOOL. South-west, on Victoria boundary, a little east of the mouth of the Lachlan river.

106. WALJEERS. South-west. Joins Franklin and Caira counties, and lies north of the confluence of the Lachlan and Murrumbidgee rivers.

107. WALLACE. South-east, on Victoria boundary. Lies east of the Australian Alps. Chief town Kiandra, one of the coldest places in the colony.

108. WARADJERY. South-west. Joins Caira and Wakool counties. Is traversed by the Murrumbidgee river, above the mouth of the Lachlan.

109. WELLESLEY. South-east, on Victoria boundary. Bounded on the east by the Wanderer range, and on the west by the Snowy river.

110. WELLINGTON. East-central. Joins Phillip and Ashburnham counties. Lies near the sources of Macquarie river, about 130 miles W.N.W of Sydney.

111. WENTWORTH. South-west. At junction of Darling and Murray rivers.

112. WERUNDA. West. Joins Rankin and Livingstone counties, and is bounded on the north-west by the Darling river.

113. WESTMORELAND. East. Joins Cook and Georgiana counties. Traversed by the Blue Mountains, and contains the sources of the Macquarie river.

114. WHITE. North-central. Joins Pottinger and Baradine counties. Is situated in the Liverpool Plains, and bounded on the north by the Peel river.

115. WINDEYER. South-west, on South Australian boundary, and bounded on the east by the Darling river.

116. WINYARD. South. Joins Mitchell and Buccleuch counties. Bounded on the north by the Murrumbidgee river, and south by the Tumberumba range. Chief town, Wagga Wagga.

117. YANDA. North-west. Joins Cooper and Rankin counties, and is bounded on the north by the Darling river.

118. YOUNG. West. Joins Livingstone and Werunda counties, and situated on the west bank of the Darling river, about 200 miles from its mouth.

8. *Cities and Towns.*

SYDNEY, the capital of New South Wales, situated on Port Jackson, in latitude 24° S., and 151° E. longitude, is the oldest city of Australia. It is well built, with fine broad streets and imposing public buildings, which, combined with its commanding situation on a splendid harbour, has gained for it the appellation of "The Queen of the South."

SYDNEY.

Including the suburbs, Sydney now contains about 120,000 inhabitants. It has 130 miles of streets, and its corporation expends £200,000 a year. It has two fine cathedrals, an extensive university, a grand post-office, and other handsome public buildings. It has also six parks, and extensive botanic gardens. The harbour of Port Jackson contains nine square miles; but, owing to its numerous bays, coves, and inlets, the coast-line is fifty-four miles in length. Sydney harbour is protected by five powerful forts, well armed with heavy Armstrong guns.

Sydney now consists of three distinct districts:—The Old City, in which are George Street, Pitt Street, and others named after the

early governors, Macquarie, King, Bligh, Hunter, and Phillip. Here are the Houses of Parliament, the Treasury buildings, and Government House, with its park and botanic gardens. To the south is the town of Wooloomooloo, almost as extensive as Sydney itself, and forming its fashionable quarter. More distant is the "North Shore," reached by steam ferry from Sydney cove in ten minutes. Mr. Anthony Trollope tells us that Sydney is less regular and more picturesque than most other new cities in Australia and America. The streets occasionally converge, and bend, and wind about, so as to give intricacy and variety. The presence of the sea in numerous bays and coves, the jutting promontories, and the beautiful gardens, add further to its variety and beauty. The walks immediately around the city are unsurpassed for picturesqueness, while the public gardens probably excel any in the world owing to their combination of sea and land, hill and valley, rock and wood and grassy slopes, with a climate that permits all the beautiful forms of vegetation both of tropical and temperate zones to luxuriate side by side.

The other important buildings of Sydney are—the large and handsome Town Hall, the Museum, and the Railway Station; while there are three theatres, many handsome banks, the Exchange, and numbers of magnificent private houses.

The parks consist of—Hyde Park, an open treeless plateau in the centre of the city; the Domain, a fine expanse of 138 acres of park land, on the north-east side of Sydney; the Botanical Gardens, 38 acres in extent, exceedingly rich and beautiful. More recently formed are Prince Alfred Park, 18 acres; Belmore Park, 10 acres; and a tract of 600 acres on the south-east, named Moor Park, adjoining which is the metropolitan race-course.

Besides Sydney, New South Wales only possesses one town with more than 10,000 inhabitants—Maitland, situated on the Hunter River, about 20 miles from the sea and 93 miles north of Sydney. The Hunter is subject to great floods, which have often done enormous damage to this town; yet to these same floods it owes much of its prosperity, the alluvial flats which fringe the river being among the most productive soils in the world. In favourable seasons they yield such prodigious crops, that this district is called "the Granary of New South Wales." The town is divided into two distinct municipalities, East and West Maitland. It contains tobacco and boot factories, many extensive warehouses, and good public buildings. In the vicinity grapes are largely cultivated, the annual produce of wine being over 200,000 gallons.

Three other towns have between five and ten thousand inhabit-

ants—Newcastle, Paramatta, and Bathurst. NEWCASTLE is the principal shipping port of the northern coast, the amount of its tonnage nearly equalling that of Sydney. It is situated at the mouth of the river Hunter, and receives all the coal as well as the varied agricultural produce of the rich Hunter River district. The town is well laid out, and is situated chiefly on high ground, although so near the sea. Its population, including the seamen of the shipping, is not much short of 10,000, and the rateable value of its land and house property is £1,120,000.

PARAMATTA is, next to Sydney, the oldest town in the colony. It is situated on the Paramatta River, which is really an extension of Port Jackson, and it is only 14 miles west of Sydney, with which it is in constant communication by steamers and railway. It is in the midst of a picturesque and fertile district, and has many fine public buildings, as well as a beautiful park, in which are some of the largest oaks in Australia. The district around is mostly devoted to fruit-growing, the orchards and orangeries of Paramatta having almost a world-wide reputation. The rateable property is valued at £235,000. It has 36 miles of streets, and over 6000 inhabitants.

BATHURST is the principal town to the west of the Blue Mountains. It is situated on the south bank of the Macquarie River (a tributary of the Darling) not far from its sources, and is at an elevation of 2330 feet above the sea, and surrounded by a fine hilly country. It is laid out symmetrically, with wide streets crossing each other at right angles. It has a railroad direct to Sydney, from which it is distant 122 miles. The country around it is agricultural and pastoral, and is especially adapted to the production of wheat and other cereals. There are several gold-fields within a radius of 30 miles from Bathurst, but none in its immediate vicinity. The population is between 5000 and 6000. It possesses five flour mills, and several tanneries, and other large manufactories of soap, candles, glue, and boots and shoes.

The following list of towns having a population of more than one and less than five thousand, is abridged from Gordon and Gotch's *Australian Almanack* for 1878:—

ALBURY, an important town on the confines of New South Wales and Victoria, in the county of Goulburn, and situated on the right bank of the Murray, over which there is a bridge. Its population is about 3000. The district round is agricultural and quartz-mining. Grapes and tobacco are largely grown, the Albury wines

having acquired a reputation. From the opposite bank of the river there is a railway to Melbourne, and the town will soon have direct railway communication with Sydney, from which it is distant 351 miles.

ARMIDALE is situated on the main northern road, 313 miles north of Sydney. It is in the county of Sandon, in the district of New England, and has a population of about 1400. The district around is pastoral and agricultural, with some alluvial gold-diggings. The scenery is mountainous, rugged, and picturesque.

ASHFIELD is a small town of about 1700 inhabitants, situated five miles west of Sydney on the railway, and almost forms a suburb to the capital.

BOURKE is a remote town, situated far in the interior on the Darling River, 576 miles north-west of Sydney. Its population is barely a thousand, but it is increasing. During part of the year it has communication by river steamers with Adelaide. The district around is mainly occupied by sheep and cattle stations, and suffers much from drought. Rich copper ore has recently been discovered here.

BRAIDWOOD is a small town of about 1200 inhabitants, situated in the southern part of St. Vincent county, on the eastern slopes of the Gourock range, at an elevation of 3357 feet above the sea. It is the principal town of the southern gold-fields, many of which are situated within a radius of 20 miles. The country also produces large crops of wheat.

DENILIQUIN, a town of about 3000 inhabitants, is situated in the county of Townsend, and is 488 miles south-west from Sydney. It is connected with Echuca in Victoria by railway, and has easy communication with Melbourne. It is the centre of a great sheep and cattle district, the country around consisting of vast grassy plains often not suitable for cultivation.

DUBBO is a town of about 1200 inhabitants, in the county of Lincoln, 226 miles north-west of Sydney. It is situated on the Macquarie River, over which there is a fine bridge. The country around is pastoral and agricultural, with a few gold mines.

FORBES, a town of about 1500 inhabitants, in the county of the same name, is situated 240 miles west of Sydney on the Lachlan River. It was formerly celebrated for its gold mines, but is now chiefly occupied with agriculture and commerce, being advantageously situated between the chief northern and southern markets.

GLEN INNES is pleasantly situated at the foot of a hill, at an elevation of 3700 feet above the sea-level. It is in the county of Gough, 373 miles N.N.W. of Sydney, and has about 1000 inhabit-

ants. The district around is pastoral and agricultural, but there is some mining, and tin exists in the neighbourhood. It is in a granite district, and has a rich soil, well adapted to the cultivation of cereals.

GOULBURN is a city, and the principal depôt of the southern inland trade. It is in the county of Argyle, and situated at an elevation of 2129 feet above the sea-level, and 134 miles south-west from Sydney, with which there is direct communication by the Great Southern Railway. The population is under 5000. There are some gold-fields in the neighbourhood, though of little importance, and copper is also worked; but the city chiefly depends on the agriculture of the district, wheat and other valuable products being largely grown. Goulburn is well laid out, and has many fine public buildings, comparing favourably in this respect with any other town in the colony.

GRAFTON is a small city, containing 2250 inhabitants, situated in Clarence county, on the river of the same name, 45 miles from the sea, and 350 miles N.N.E. of Sydney, with which it has regular steamship communication twice a week. The lowlands of the Clarence River are very rich, producing many tropical products, such as maize, tobacco, and sugar-cane, all of which are very extensively grown, though the crops are sometimes injured, or even totally destroyed, by floods. There are rich gold-fields on the Upper Clarence, and there is also abundance of tin, and some copper and antimony. The celebrated meat-preserving works at Ramornie are situated on the Oraru River a few miles west of Grafton.

GREENFELL is a town with about 2000 people, in the county of Monteagle, 233 miles due west of Sydney. It was originally a gold-field town, and gold-mining is still extensively carried on in the quartz reefs that abound in the neighbourhood. One of the shafts is 700 feet deep. The town now depends, however, chiefly on agriculture, the soil being rich, and well suited for vines, fruit trees, and cereal products, all of which are largely grown, and rapidly increasing.

GUNDAGAI is a small town of about 1000 inhabitants, in the county of Clarendon, and situated on the Murrumbidgee River, 245 miles south-west of Sydney. The river is navigable by steamers as far as this place, and it is here crossed by a fine bridge and viaduct, five-eighths of a mile long, which cost £38,000. The river flats are subject to floods, and the original town was washed away in 1852, when many lives were lost. It is now built at a higher level. There are some gold and copper mines in the vicinity, and there is also a considerable amount of agriculture, wheat, maize, and tobacco being largely grown.

HAMILTON, a town on the Great Northern Railway, 77 miles north of Sydney. It has about 1000 inhabitants, and is chiefly remarkable for its patent fuel works, which utilise the small coal from the mines, forming it into egg-shaped blocks at the rate of 60 tons a day. (Not shown on any map, but must be near Newcastle.)

HAY, in the Riverina district, and county of Waradjery, 460 miles south-west of Sydney, is a small town of about 1000 inhabitants. It is situated on the Murrumbidgee River, which is here crossed by a fine iron swing-bridge, so as not to stop the navigation. The surrounding country is pastoral, and is wholly taken up by sheep and cattle stations.

HOME RULE, in the county of Phillip, 485 miles west of Sydney, is a small town with a population of about 1000, situated in a mineral and grazing district. Much wool is produced, and gold-mining is largely carried on.

KEMPSEY, an agricultural town on the Macleay River, in the county of Dudley, and 280 miles N.E. of Sydney. Maize is the staple product, but some sugar is also produced.

KIAMA, a seaport town in the county of Camden, and 90 miles south of Sydney, with a population of about 1500 persons. It has a large export trade in butter, eggs, and poultry, and produces also maize, wheat, and barley. There is also good coal and iron in the district.

LITHGOW is a rising town on the Great Western Railway, at the base of the Blue Mountains, in Cook county, and 96 miles west of Sydney. It has numerous collieries, ironworks, and foundries, as well as copper-smelting works, brick-making, and *terra cotta* works. It has a population of 1800 persons.

LIVERPOOL, one of the earliest settlements of the colony, is situated on the George's River, 22 miles south of Sydney, and on the Great Southern Railway. Its population is about 2000, and it is surrounded by an agricultural district in which dairy farms predominate. There are also extensive paper-mills.

MORPETH, a thriving town situated at the head of the navigation of the river Hunter, three miles from Maitland, in the county of Northumberland, and 95 miles north from Sydney. There are many coal mines in the neighbourhood, and the rich river-flats yield maize, sugar-cane, and other products. The population is about 1250 persons. There is a branch railway to Maitland.

MUDGEE is an important mining town in Wellington county, on the Cudjegong River 153 miles north-west of Sydney. It is in the centre of a rich gold district both alluvial and quartz-reefs, the latter being practically inexhaustible. There is also a large breadth

of land under cultivation, wheat, maize, barley, and oats, being the principal crops. The population is about 1800.

MUSWELLBROOK is a small town, with a population of 1445 persons, situated in Durham county on a branch of the Hunter River, and on the Northern Railway, 55 miles from Maitland, and 150 miles north-west of Sydney. The chief productions of the surrounding district are wheat and maize, with some tobacco, sugar, and wine.

ORANGE is a town situated in the counties of Wellington and Bathurst, at an elevation of 2890 feet above the sea-level, and 192 miles by railway west of Sydney. It is a great business place in the centre of a wheat-producing district, and has a population of about 3000 persons. The chief products are wheat, maize, barley, oats, and potatoes, and there are many large flour-mills, which grind 250,000 bushels of wheat per annum. There are also important gold-fields in the neighbourhood, among which are the Ovens, once so celebrated. Copper also abounds.

PARKES is a new, thriving town in the Billabong gold-field, situated in the county of Ashburnham, 283 miles west of Sydney. Its population is nearly 5000, owing to its being in the centre of one of the best gold districts in the colony.

QUEANBEYAN is a small town of about 1000 inhabitants, in the county of Murray, 190 miles south-west of Sydney. It is picturesquely situated in a pastoral and agricultural district, producing abundance of wheat, maize, barley, oats, and potatoes. There are also valuable deposits of copper, silver, lead, iron, and gold, in the vicinity, but they are not yet extensively worked.

RICHMOND is situated in the county of Cumberland, within a short distance of the Hawkesbury River, and 38 miles north-west from Sydney, and contains 1065 inhabitants. It is in a rich agricultural district, producing both cereal crops and sugar.

SINGLETON is a town of 1500 inhabitants, in the county of Northumberland, situated on the Hunter River, 30 miles north of Maitland, and 123 miles north-west of Sydney. It is a place of considerable trade, the surrounding district being rich in agricultural products, the country being flat alluvial land of a very fertile character, though, as is so often the case in Australia, subject to severe inundations.

TAMWORTH is a town of 4000 inhabitants, situated on the Peel and Cockburn rivers, on the borders of Inglis and Parry counties, 251 miles north of Sydney, and on the line of the proposed extension of the Great Northern Railway. It is built on low ground, surrounded by a range of undulating hills, in the midst of a fine pastoral,

agricultural, and mining district. Wheat is largely grown, and the district contains over a million of sheep. There are several important gold-fields at distances of 30 to 60 miles.

WAGGA WAGGA is a town of 2500 population, situated in the county of Wynyard, on the south bank of the Murrumbidgee, about midway between Sydney and Melbourne, and distant from the former about 315 miles by railway. It does a large business with the surrounding districts, which are principally pastoral. Cereals, however, are grown to some extent, and a considerable quantity of wine is manufactured.

WALLSEND is a coal-mining town, eight miles from Newcastle, in the county of Northumberland, and, with the adjoining villages, has a population of about 5000 inhabitants. The town is rapidly increasing, the output of the mines being more than 2000 tons a day.

WINDSOR is a town of about 1800 inhabitants, situated in the county of Cumberland, on the Hawkesbury River, 35 miles north-west of Sydney. It is seated on a hill, but surrounded by lowlands, which are occasionally devastated by floods, though of unrivalled fertility, often producing 100 bushels of maize to the acre.

WOLLONGONG is a seaport town in the district of Illawarra and county of Camden, 64 miles south of Sydney. It has 1500 inhabitants. There are productive gold-fields in the vicinity, and the country is also rich in dairy produce. A valuable deposit of shale produces kerosene oil, of which 1500 gallons are manufactured weekly. About 200,000 tons of coal were raised in 1876. Iron ore and limestone also occur in the neighbourhood. A breakwater and lighthouse have been built, and a basin formed, so that the harbour is greatly improved.

YASS is an important and growing town, situated in the county of King, 180 miles south-west of Sydney, on the Yass River, a tributary of the Murrumbidgee, and on the line of the Great Southern Railway. The population is about 1600. The surrounding country is rich in copper, silver, and lead ore, but these are not yet developed, and the district now depends mainly on agriculture, the principal crops being wheat, maize, barley, oats, and potatoes. The geological formation of the district is granite, limestone, and slate.

YOUNG, a rising town in Monteagle county, 250 miles south-west of Sydney. The gold-fields in the neighbourhood, to which the town owes its origin, are now less important than the agricultural resources of the district. Wheat is largely grown, and some wine is made, while fresh land is constantly being brought

into cultivation. The population is now about 1500, and is rapidly increasing.

9. *Government, Public Institutions, Education, etc.*

The Government of New South Wales consists of a Governor nominated by the Crown, and a Parliament consisting of two houses, called respectively the Legislative Council and the Legislative Assembly. The Legislative Council consists of 36 members nominated by the Crown for life; and the Assembly of 73 members elected by sixty-one constituencies, one of which is the university. The Assembly is chosen by universal suffrage and by ballot, and there is no property qualification for members. Parliaments are triennial. Imperial laws have effect in the colony, unless superseded by local Acts. All enactments require the sanction of the Queen before becoming legal. The executive consists of the Governor and a Council of six ministers.

Justice is administered by means of a Supreme Court, District Courts, Courts of Quarter Sessions, and Courts of Petty Sessions. There are four Judges and six District Court Judges, besides Justices of the Peace.

State aid is granted to all religious denominations in proportion to the number of their members. Those which actually receive such aid are the Church of England, the Presbyterians, the Wesleyans, and the Roman Catholics, who receive among them the sum of £18,320 : 10 : 10. per annum.

The educational system consists of primary schools, the grammar school, and the university. The primary schools prevail all over the colony, the fees varying from 5½d. to 9d. a week, according to the number of children in the family. In 1876 the number of public schools was 1086, and of private schools 543. State aid, amount-

ing in all to £305,449 per annum, is given to these schools, on condition that denominational schools give secular education alone for two hours morning and afternoon. Schools of art, free libraries, mechanics' institutions, museums, and botanic gardens, are also liberally assisted or supported by the State.

VICTORIA.

London: Edward Stanford, 55, Charing Cross.

CHAPTER VIII.

THE COLONY OF VICTORIA.

1. *Origin, Geographical Limits, and Area.*

VICTORIA, once called Australia Felix from its beauty and fertility, though the smallest of the Australian colonies, is the most populous and the most wealthy, and therefore well deserves to take the first rank after the parent colony, New South Wales, from which it was separated on July 1, 1850.

Victoria is somewhat smaller than Great Britain, having an area of 88,198 square miles. It lies between the limits of 34° and 39° south latitude, and between the meridians of 141° and 150° east longitude: thus forming the most southern portion of the continent. Its form is roughly triangular, the western side being 260 miles long, and the length from this base to the eastern point 420 miles. It is bounded on the west by South Australia, the boundary being the 141st meridian. On the north it is bounded by New South Wales, the dividing line being the Murray River to one of its sources at Forest Hill, thence in a straight line to Cape Howe. On the south it is bounded by the ocean, and the coast-line is estimated to have a length of 600 miles.

2. *Physical Features.*

The surface of this colony is even more diversified and less easy to describe than that of New South Wales.

A broad and irregular range of mountains runs through the colony from east to west, dividing it into two unequal parts, all the truly Victorian rivers having their sources on the southern side of the watershed and flowing to the sea, while those rising on the northern slopes all empty themselves into the Murray. The eastern and loftiest portion of the mountain range is known as the Australian Alps, while its extension westwards is termed the Dividing Range. Farther west it is called the Pyrenees, some of whose peaks are incongruously named Ben Nevis and Mount Ararat. Beyond these the range turns northward and forms the Grampians, whose principal peak, Mount William, is 5600 feet high. The highest part of the Australian Alps in Victoria is Mount Bogong (6508 feet), forming part of a northerly spur between the Mitta-mitta and Ovens Rivers, and about 50 miles west of the New South Wales boundary. Farther west a few peaks rise above 6000 feet. All along the main chain are many northern and southern spurs and short ranges, as well as a number of outlying peaks and mountains often extending to a width of fifty or a hundred miles. In the central part of the Dividing Range the hills vary from 2000 to 3500 feet, while both here, and more especially in the country west of Melbourne, are hundreds of volcanic mountains, some with very perfect cones and craters. There is no connected system of coast-ranges. To the east are the Wanderer Hills, entering the colony from New South Wales. The Strzelecki Range crosses the southern promontory; while another crosses the south-western promontory and terminates at Moonlight Head-land, a little north-west of Cape Otway.

The larger portion of Victoria is mountainous or hilly, and it is only in the north-western portion that we meet with plains at all equal in extent to those of New South Wales. This is the Wimmera district, extending from

the Pyrenees and Grampians to the Murray, and covering an area of more than 20,000 miles. Here are vast sandy and sparsely grassed plains intersected with belts of "myall scrub" and forests of Casuarina, Banksia, and Eucalyptus. Occasionally patches of land occur suitable for agriculture, but by far the larger portion is only suited for pasture. In some parts there are extensive swamps, and the whole district is liable to severe droughts, so that water has to be obtained by means of wells from 80 to 140 feet deep.

With the exception of the Murray, Victoria has few navigable rivers. In winter these rivers become angry torrents, carrying devastation over much fertile country. During the summer heats many of them dwindle down to small streams or to detached pools of water, while some entirely dry up in exceptionally dry seasons, bringing terrible loss to the stock-owners, whose cattle die by thousands from want of water. The principal rivers in the order of their length are—the Murray, the chief sources of which are in the colony, and whose main stream bounds it for a distance of nearly 600 miles, its total length measured along its course being 1400 miles; the Goulburn, 230 miles long, a tributary of the Murray, having its source in the great Dividing Range to the north-east of Melbourne; the Glenelg, 205 miles long, rising in the Grampians, and flowing in a westerly and southerly direction to the sea at the south-west corner of the colony; the Loddon, 150 miles long, has its sources in the Dividing Range north-west of Melbourne, and flows nearly due north to the Murray; the Wimmera has its sources in the Pyrenees and Grampians, and, flowing northward, loses itself in salt lakes and arid plains before reaching the Murray; the Avoca, 130 miles long, rises on the eastern slopes of the Pyrenees, and also terminates in swamps and lakes; the Hopkins, 110 miles long, rises

in the Pyrenees and flows southward to the ocean; the Ovens, 100 miles long, rises in the Australian Alps, near Mounts Smyth and Selwyn, and flows in a north-west direction to the Murray; and the Yarra-yarra, 90 miles long, which rises among the southern spurs of the Dividing Range, and, flowing west, enters the bay of Port Phillip at Melbourne.

There are numerous lakes in Victoria, but many are saline, and some are depressions near the shore, only separated from the ocean by sandbanks. A few are formed in ancient craters. The lakes of the Wimmera district are mostly salt—as Lake Hindmarsh which covers more than 25,000 acres. Lake Burrumbeet, near Ballarat, and some others among the mountains, may be true alpine lakes, but these interesting geographical features have not been sufficiently examined.

The scenery of Victoria is diversified and pleasing. The hills and mountains are mostly clothed with dense forests; and the ranges of the Australian Alps offer much grand mountain scenery. Again, in the west, the Pyrenees and Grampians are very picturesque, and some of the rivers are broken by waterfalls of great beauty. The whole country from Melbourne westward is exceedingly rich in soil and varied and beautiful in scenery. Here there is an additional charm in the numerous extinct volcanoes which occur in extraordinary numbers. In many instances the craters are perfectly defined, leaving not the slightest doubt as to their former character. In general they appear as isolated cones, such as Mounts Elephant, Eles, Napier, and others, standing out conspicuously from the surrounding level; in others, as the Warion Hills, between the lakes Colac and Corangamite, they assume the form of a small chain comprising about a dozen volcanic hills. Within and around the craters are strewed rocks of pumice and lava; and the lower

part is often occupied by a small lake, sometimes of fresh water, at others of salt, or nauseous to the taste and smell, as from the presence of sulphuretted hydrogen. This fine country is also variegated with salt lakes and lagoons, some of which, by their circular form, their peculiar mineral water, and a sort of escarpment around them, have the appearance of craters, although not in the customary form of cones. Luxuriance of vegetation everywhere accompanies the volcanic deposits, to such an extent as sometimes to be injurious to the animals that feed on it. As Mr. Westgarth well remarks—"The picture of the past, called up by geological science, contrasts strikingly with the present scenery. The most violent commotions of nature have been succeeded by the opposite extreme of tranquillity. Sheep fat for the shambles the whole year round, horses in the highest spirit and condition, oxen half a ton in weight, sport over the verdant grass supported by the deep soil now covering the once livid rocks that were vomited over the country."[1]

Mr. Howitt also, in his *Two Years in Victoria*, speaks of the rich black volcanic earth and the greenness of the luxuriant vegetation in the country between Ballarat and Geelong, and westward to the Glenelg River. He describes the upper valley of the Moorabool as being exceedingly picturesque, the river running through deep glens enclosed by lofty precipices and hung with fine forests. For miles the banks of the river display extreme beauty, winding about amid noble promontories scattered with giant trees, and high hollow combes as impressive in their seclusion as they were rich in soil. Here and there mounds rise out of the bottom of the valley so rounded and beautiful that one wonders not to see them seized

[1] *Victoria, late Australia Felix;* being an historical and descriptive account of the Colony and its Gold Mines. By William Westgarth, late member of the Legislative Council of Victoria. London, Simpkin and Marshall. 1853.

upon and crowned with picturesque mansions. Others run in low lines across the valley, looking as if designed by some skilful landscape-gardener to give effect to princely grounds, yet so draped in delicate verdure as only nature could drape them.

3. *Climate, Natural History, and Geology.*

Although Victoria is not so hot as New South Wales or Queensland, there is not much difference in the maximum summer temperature, which often rises to 100° or even to 108° Fahr. in the shade. There is, however, a considerable amount of fine clear weather not oppressively warm, and except when the hot northerly winds blow, the climate is exceedingly agreeable. In the lowlands frost is almost unknown, but in the mountainous districts it often freezes at night, although the days may be of a summer temperature. The mean temperature of Melbourne is 58°. The rainfall is very variable in different years. The mean at Melbourne is 25 inches, but it has been so low as 14 inches and as high as 48. In the mountains, especially towards the east, the rainfall is greater, while the Wimmera district in the north-western interior is very dry, having rarely above 14 inches, while the soil is mostly sandy and the evaporation enormous. On the whole, Victoria has probably the most agreeable climate of any part of the continent of Australia.

Victoria being (comparatively) so small, and divided by no great natural barriers from New South Wales or South Australia, it is not to be expected that it should present many peculiar forms of animals or plants. Its varied surface and rich soil are, however, highly favourable to vegetable and animal life, and the special Australian flora and fauna are here developed with great luxuriance. Many English quadrupeds and birds have now been

introduced and become naturalised; such as hares, rabbits, deer, goats, pheasants, partridges, quails, white swans, foreign ducks, thrushes, larks, and other song-birds; and many of these are becoming more or less plentiful. Rabbits have increased in some of the scrubs to such an extent as to be a nuisance. Deer may be found in some of the mountain ranges; and the Axis deer of India, of which thirty-five were turned out in the Wimmera district a few years since, now number herds of some hundreds in the ranges of the Western Grampians and in many of the surrounding mountains. Angora goats have also been turned out, and many of the birds have increased wonderfully, so that the sweetest songsters of England may be often heard in the woods of this remote colony.

The southern slopes and valleys of the Dividing Range to the north-east of Melbourne are clothed with magnificent forests, and it is here that trees have been found surpassing in height the famed giant trees of California. Mr. Ferguson, the Inspector of State Forests, in an official report made in 1872, states, that among the various tributaries of the Watts River (a northern branch of the Yarra-yarra) several species of Eucalyptus attain gigantic dimensions never met with in any other forests. There are large tracts near the sources of the Watts where the trees average from 250 to 300 feet high, mostly straight as an arrow and with very few branches. Many fallen trees measure 350 feet in length, and one huge specimen, which lay prostrate across a stream, was found by actual measurement with a tape to be 435 feet from its roots to where its trunk had been broken off by the fall. This broken end was three feet in diameter, so that at the lowest estimate the entire tree must have been over 500 feet high—by far the loftiest tree as yet ascertained to exist on the globe. At five feet from the ground it measures eighteen feet in diameter. The tree

had been much burnt, and the broken top entirely destroyed. This tree was a Eucalyptus, probably of the species named *E. obliqua* or *E. amygdalina*. The tallest of the Wellingtonias of California do not exceed 325 feet, but they are usually thicker at the base. This huge fallen tree was however eighteen feet in diameter at five feet from the ground, and some are said to exceed twenty feet in diameter, but these are rarely more than 300 feet high. It is therefore probable that not only in height but also in the quantity of timber in a single tree, these Victorian Eucalypti far surpass all other trees in the world.

Geology.—The geological formation of Victoria is very varied, and this helps to give the country much of its beautiful and romantic scenery. It possesses far less of the barren Tertiary sandstone than the other colonies, and a larger proportion of Palæozoic and volcanic rocks, to which it owes its extreme fertility. The Dividing Range running through the centre of the country from east to west consists of granitic and Silurian rocks, which extend also to the Grampians on the west and the Australian Alps on the east. South of the mountains to the sea was once an enormous deposit of Upper Palæozoic or Secondary rocks, which have since been denuded. These rocks had a strike at right angles to the mountain range, and the beds of quartz and other hard rocks now stand up in ridges running north and south across the country so regularly that they are used as sure guides by the wandering bushman. These more recent deposits seldom produce much gold, and it is owing to their extensive denudation that Victoria owes much of its auriferous treasures. The mode in which the gold occurs has already been described in our chapter on the Geology of Australia, and need not be repeated here. Devonian sandstones, slates, and limestones, occur in Gipps Land.

Secondary rocks, though scanty, occur in the Cape Otway country, and in the region east of Western Port, as well as in the Wannon district east of the Glenelg River. These regions are poor, and are either uninhabited or pastoral. Coal is found at Cape Otway and Western Port, but it is not of great value, being of Mesozoic age.

Tertiary deposits cover one-third of the surface of the colony. The calcareous or desert sandstone of Pliocene age, which is so largely developed in West and South Australia, enters Victoria in the west and north-west, and forms much of the poor arid pastures of the Wimmera country. To the south of the mountains small patches of it only are found at Port Phillip Heads and Western Port. The quartz, gravel, clay, sandstone, and conglomerate, in which alluvial gold is found, is Older Pliocene, while the fresh-water sandstones of Geelong and of the Loddon valley are Newer Pliocene. The coloured clays of Warrnambool on the south-western coast are Post-pliocene. Miocene beds occur in the Moorabool valley west of Geelong and in the Cape Otway region; while the sandstone of Portland in the west and the rough limestone of the Gipps Land lakes are of the same age.

The extinct volcanoes of Victoria are very remarkable, and apparently very recent, so that the traditions of eruptions, existing among the natives, may be founded on fact. Many of the plains, as those north and west of Melbourne, are formed by outflows of basalt, as are some very extensive plains in the western part of the colony. The successive flows of basalt, beneath which the "deep leads" of the gold-miners are found, have already been described. The volcanic cones and craters which are so abundant in the south-west of Victoria and in the Dividing Range have discharged basalt, lava, scoriæ, cinders, mud, and ashes. In many places, as about Ballarat, these extinct volcanoes may be counted by the score. Some

are filled up at the summit, others are surrounded by a rim miles in extent, while others again have their craters filled with water. Several of the western lakes appear to have been craters. Many of these volcanoes were in eruption during the Miocene period, others in Pliocene and Post-pliocene, or even in recent times. To the south-west, near Lake Colac, are singular ridges of lava and basalt forming a labyrinthine network of rock, among which caverns of considerable extent have been found.

4. *Colonisation, Population, etc.*

Victoria dates as a separate colony from July 1851, before which period it formed part of New South Wales, and partook of its early history. In the previous year, 1850, it had a population of 76,000. Then came the discovery of gold, and from every part of the globe men rushed to get a share in the treasure. At first the Government attempted to prevent gold-mining, but finding this impossible, licenses were issued in September 1851. Then followed a scene of the wildest confusion. Settlers left their farms, merchants their desks, professional men their offices. Workshops were left without workmen, ships without crews, and the whole country was, as has been well said, "drunk with gold." Any account of the gold-fever belongs to history rather than to geography, but we may here note its effects on the population and development of the colony. The influx of men of all classes from the mother country, and of almost all the races of the world, together with numbers of released or escaped convicts from the neighbouring colonies, led to a struggle for existence, in which the most hardy, the most energetic, the most patient, or the most far-seeing, could alone succeed. Thus, amid much trouble, much degradation, and much crime, the seething mass of humanity,

drawn together by the love of gold, has worked itself into something like order; and the result is a population of almost unexampled energy, which is now steadily engaged in developing all the resources of a fertile and beautiful country. While gold-mining still continues to be the great feature in Victorian industry, it is now carried on by the help of machinery, and of all the refinements of modern science. The wealth which it has brought to the colony has been in part expended in useful public works. Agriculture has extended, manufactures have been established, towns and villages have been built, education and science have been fostered, so that Victoria now stands at a high level of colonial prosperity and civilisation.

The increase of population caused by the rush for gold was amazing. From 76,000 in 1850 it increased to 312,000 in 1854, to 538,000 in 1860, to 726,000 in 1870, while in June 1877 the population was estimated at 849,021. While the Europeans have been thus rapidly increasing, the indigenous inhabitants have as steadily diminished. In 1835 they were estimated at 5000; in 1851 they had diminished to 2700; while they now do not much exceed 1000 individuals. In the general census of the population are included about 18,000 Chinese, nearly two-thirds of whom are gold-miners. The proportion of the sexes has fluctuated considerably. Just before the gold-fever immigration, the females were about two-thirds as many as the males. In 1854 there were nearly twice as many males as females; but since that date the proportion of females has steadily increased, till it now amounts to about six-sevenths of the other sex.

5. *Productions, Trade, Shipping, etc.*

As New South Wales is pre-eminent in wool and other products derived from flocks and herds, so is Victoria pre-

eminent in gold as an article of export. Up to the end of 1876 the quantity of gold raised in the colony was of the value of more than £185,000,000, far exceeding that of all the rest of Australia. Considerable quantities of silver, tin, and antimony have also been worked; with copper, lead, zinc, cobalt, bismuth, manganese, iron, coal, bitumen, and sulphur, in comparatively small quantities. The value of the tin raised, up to 1876, was over £336,000, of antimony £120,000. Diamonds and sapphires have also been found in small quantities. Gold is now obtained from enormous depths. The quartz lodes at Stawell are reached by a shaft 1706 feet deep, and there are many shafts over 1000 feet. Victoria is celebrated for its nuggets or solid masses of gold, which surpass those of any other part of the world. The largest, called the *Welcome Stranger*, weighed 190 lbs., and was found in 1869 within two inches of the surface at Moliagul, north of the Dividing Range; while in the same year the next largest, *The Welcome*, weighing 183 lbs., was found at Ballarat south of the range, in a neglected hole 180 feet deep; and many others have been found in various localities from 2 to 74 lbs. weight.

Turning from mining to agriculture, we find Victoria occupying the very first rank in the cultivated products of the soil, although far inferior to New South Wales in wool and other pastoral products. Wheat is grown in such quantities as not only to support the population, but to leave a large surplus for export to other countries. In 1877 the wheat crop amounted to 5,279,000 bushels. Potatoes also are exported, and the surplus manufactured into starch and farina, the crop in 1877 amounting to 134,000 tons. More than 2,000,000 bushels of oats were grown, and half a million bushels of barley, with a small quantity of maize. Tobacco and wine are also largely grown.

Although (as already stated) the flocks and herds of the colony are far inferior numerically to those of New South Wales, yet this is only on account of its much smaller extent, for the proportionate numbers to area would be actually greater. In 1876 there were no less than 11,750,000 sheep and 1,054,000 horned cattle, while the total number of cattle, horses, pigs, and sheep, was 13,141,000. In New South Wales at the same period the number was about 28,000,000, with an area about four times as large. Other important articles produced in Victoria for export are leather, to the value of £194,000; preserved meats, £166,000; tallow, £174,000; bark, £60,000; soap, £6700; and wine, £4700.

Owing to a system of bonuses granted by the Government, and a heavy protective tariff, many manufactories have been established in Victoria, among which are numerous woollen mills, tanneries, breweries, saw-mills, with iron, brass, copper, and tin works.

The shipping is extensive, there being 47 steamers and 382 sailing vessels on the register; while the clearances amount to over 2000 vessels inwards and outwards per annum. The revenue for the year 1877-78 was estimated at £4,904,180, and the expenditure at £4,860,114. The public debt in 1876 was near £14,000,000.

6. *Roads, Railways, and Telegraphs.*

With the exception of a few miles near the larger towns, there can hardly be said to be any good common roads in Victoria, though there are tracks and roadways all over the country, along which coaches and other vehicles travel regularly. Some idea of these roads may be formed by Mr. Anthony Trollope's description of them. He says—"A Victorian coach, with six, or perhaps seven or eight horses, in the darkness of the night, making its

way through a thickly-timbered forest at the rate of nine miles an hour, with the horses frequently up to their bellies in mud, with the wheels running in and out of holes four or five feet deep, is a phenomenon which I should like to have shown to some of the very neat mail-coach drivers whom I used to know at home in the old days. I am sure that no description would make any one of them believe that such feats of driving were possible. I feel that nothing short of seeing it would have made me believe it. . . . I made many such journeys, and never suffered any serious misfortune."

Railroads have in fact superseded the necessity for good main roads. These were commenced soon after the gold discoveries, and in December 1876 there were 702 miles open for traffic, 259 miles in course of construction. Most of these were made by the Government on a uniform gauge of five feet three inches. The chief lines are—one from Melbourne by Castlemaine and Sandhurst to Echuca, on the Murray, a distance of 156 miles. One from Melbourne to Geelong, 45 miles, and thence to Ballarat 55¼ miles. A line from Ballarat through Mount Ararat to Stawell, 75¾ miles. A line from Geelong to Colac, 47 miles. The north-eastern line from Melbourne to Wodonga on the Murray (opposite Albury in New South Wales), 187 miles. Besides these there are many branches, a number of short lines out of Melbourne, and a southern line to Sale in Gipps Land nearly finished. The fares are about 2d. a mile first class, and 1⅓d. a mile second class. Coaches connect all the towns not on the line of rail with the nearest stations. Electric telegraphs have been extensively constructed, no less than 4812 miles being in operation in 1876; and there are 180 stations in different parts of the colony.

7. *Political and Civil Divisions.*

Victoria is divided into four districts, six provinces, and thirty-seven counties. The districts are—GIPPS LAND, THE MURRAY, WIMMERA, and LODDON. The provinces are the divisions which return the Legislative Council. They are named according to their position—North-Western, North-Eastern, Central, Southern, Eastern, and Western.

GIPPS LAND, named after one of the early Governors of Australia, occupies the south-eastern portion of the colony, and comprises about one-fifth of its whole area. Much of it on the north and east is unavailable for agricultural purposes from its rugged and mountainous character, though it contains considerable tracts of rich country and alluvial flats. It is for the most part heavily timbered, and the expenses of clearing are very great. In the south and west portion much land is occupied for farming and cattle-grazing, Melbourne being largely supplied with fat cattle from this part of the country. It has also great mineral resources, comprising gold, silver, copper, iron, lead, tin, coal, marble, and limestone. The climate and soil are well fitted for the growth of oranges, hops, tobacco, and opium. Gipps Land is a country of giant mountains, fine streams, and fertile plains. Much of the rugged country to the north and east is still unexplored, and is almost inaccessible from the precipices and ravines with which it abounds.

THE MURRAY DISTRICT is a vast tract of country lying in the north-east, watered by the Mitta-mitta, Kiewa, Ovens, Broken, and other rivers flowing northward from the Australian Alps. It is generally a mountainous and well-wooded country. It contains the celebrated gold-mines of the Ovens, Omeo, Buckland, and Wood's Point. To the north-east are extensive grassy plains, and there is also some good land on which wheat, tobacco, and vines are grown.

THE WIMMERA DISTRICT occupies the whole of the north-west of Victoria, covering an area of 25,000 square miles. It is almost exclusively pastoral, consisting of vast sandy plains, but poorly grassed, and intersected by belts of scrub and forest. In the north-west there are extensive swamps near the Murray River, and most of the rivers—the Wimmera, Oven, Richardson, and others—are liable to dry up in hot seasons, or become mere chains of water-holes.

THE LODDON DISTRICT occupies the north-central part of the colony to the east and west of the Loddon River. It is also chiefly pastoral, but contains some auriferous land towards the south.

The Counties, arranged in alphabetical order, are as follows :—

1. ANGLESEA. Area, 1707 square miles ; population, 5492. It is situated to the north-east of Melbourne, beyond the Dividing Range ; it is traversed by the Upper Goulburn river.
2. BENAMBRA. Area, 2757 square miles ; population, 1228. It is situated to the north-east, on the New South Wales boundary. It contains the sources of the Murray river.
3. BENDIGO. Area, 1970 square miles ; population, 46,109. It is situated to the N.N.W. of Melbourne, about midway between the Dividing Range and the Murray. It is traversed by the railway from Melbourne to Echuca.
4. BOGONG. Area, 3094 square miles ; population, 25,797, situated in the Murray District west of Benambra ; contains the termini of the North-Eastern Railway from Melbourne.
5. BORUNG. Area, 4292 square miles ; population, 11,140. Situated to the north of the Grampians in the Wimmera District.
6. BOURKE. Area, 1735 square miles ; population, 236,778. Situated north of Port Phillip Bay, and contains Melbourne, the chief city of the colony.
7. BULU-BULU. Area, 3595 square miles ; population, 4116. Forms the southern extremity of the colony, and of the Australian continent.
8. CROAJINGOLONG. Area, 3050 square miles. Situated on the

coast at the eastern point of the colony. It had only 372 inhabitants in 1871.

9. DALHOUSIE. Area, 1314 square miles; population, 26,471. Situated immediately north of Melbourne, beyond the Dividing Range.
10. DARGO. Area, 1690 square miles; population, 2222. Situated south of the Australian Alps, and midway between Melbourne and the eastern point of the colony.
11. DELATITE. Area, 3238 square miles; population, 11,903. Situated north-east of Melbourne, beyond the Australian Alps, and to the west of the Ovens river.
12. DUNDAS. Area, 2140 square miles; population, 6888. Situated to the west of the Grampians, between the Upper Glenelg and the Wannon rivers.
13. EVELYN. Area, 1216 square miles; population, 5997. Occupies the valley of the Yarra-Yarra to the east of Melbourne.
14. FOLLETT. Area, 1108 square miles; population, 1240. Situated between the Glenelg river and the South Australian boundary.
15. GLADSTONE. Area, 1812 square miles; population, 16,688. Situated in the Loddon District, north-west of Melbourne, between the Avoca and Loddon rivers.
16. GRANT. Area, 1852 square miles; population, 7388. Situated on Port Phillip Bay, west of Melbourne.
17. GRENVILLE. Area, 1477 square miles; population, 60,917. Situated to the west of Grant. Ballarat is at its northern extremity.
18. GUNBOWER. Area, 1357 square miles; population, 614. Situated in the angles between the Loddon and the Murray rivers to the north of Bendigo.
19. HAMPDEN. Area, 1580 square miles; population, 7172. Situated to the west of Grenville and south of Ripon counties.
20. HEYTESBURY. Area, 922 square miles; population, 3059. Situated on the coast to the south of Hampden.
21. KARA-KARA. Area, 2338 square miles; population, 9611. Situated to the north of the Pyrenees, and west of Gladstone county.
22. KARKAROOC. Area, 5900 square miles. In the Wimmera District, between Borung county and the Murray. Mostly covered with "mallee" scrub. In 1871 there were only 349 inhabitants.
23. LOWAN. Area, 5033 square miles; population, 1883. In the

Wimmera District, between Borung county and South Australia. Has much sandy desert and "mallee" scrub.

24. MILLEWA. Area, 3589 square miles. Forming the north-western corner of the colony. Mostly plains covered with scrub and occasional patches of pasture. There were only 109 inhabitants in 1871.
25. MOIRA. Area, 3136 square miles; population, 3352. Situated in the north of the Murray District, and west of Bogos and Delatite counties.
26. MORNINGTON. Area, 1700 square miles; population, 7397. Situated on the coast to the east of Port Phillip Bay.
27. NORMANBY. Area, 2013 square miles; population, 10,750. Situated on the coast, and at the extreme west of the colony, bounded by the Glenelg and Wannon rivers.
28. POLWARTH. Area, 1185 square miles; population, 3837. On the coast to the west of Grant county. Contains Cape Otway and Colac lake.
29. RIPON. Area, 1771 square miles; population 14,010. Bounded on the north by the Pyrenees, and on the south by Hampden county.
30. RODNEY. Area, 1709 square miles; population, 7390. Situated due north of Melbourne, between the Goulburn and Campaspe rivers, and reaching to the Murray at Echuca.
31. TATCHERA. Area, 3370 square miles; population, 563. In the Wimmera District, between Loddon county and the Murray.
32. TALBOT. Area, 1645 square miles; population, 84,762. Situated north-west of Melbourne, beyond the Dividing Range, and adjoining Bourke and Dalhousie counties.
33. TAMBO. Area, 2140 square miles; population, 486. In Gipps Land, between the Australian Alps and the sea, and between Dargo county and the Snowy river.
34. TANGIL. Area, 2893 square miles; population, 11,001. In Gipps Land, eastward of Melbourne, beyond Evelyn county, and just reaching the sea.
35. VILLIERS. Area, 1641 square miles; population, 21,031. On the south-west coast, between Hampden and Normanby counties.
36. WEEAH. Area, 3966 square miles. Part of the Wimmera District, north of Lowan county, and quite unsettled. Consists almost wholly of sandhills, heath, and scrub. On the census night in 1871 there was not a single inhabitant in this county.

37. WONNANGATTA. Area, 2243 square miles; population, 3972. Situated between the Australian Alps and the Dividing Range; very mountainous, and containing the sources of the Goulburn and Mitchell rivers.

8. *Cities and Towns.*

MELBOURNE, capital of the colony, has, in the course of forty years, become a city of 200,000 inhabitants, or, with the suburbs

COLLINS STREET, MELBOURNE.

within a ten-mile radius, nearly 250,000, thus already taking rank in the ninth place amongst the cities of the British Empire, while in other respects unquestionably one of the best-built and finest in the world. It stands on seven hills, rising gradually from the Yarra-Yarra, and is laid out in broad streets intersecting each other at right angles. It has a number of public squares, gardens, and parks, including the Botanic, Fitzroy, and Carlton Gardens; the Royal, South, and Prince's Parks; Argyll, Lincoln, and other squares. The buildings are massive, and often built at great expense, while many of the warehouses will compare favourably with

the best in London. Amongst the noteworthy buildings are the Treasury, the Post-Office, the Library, and the Mint, besides the Town-hall, the University, the Houses of Parliament, and others. The University receives from the State an annual grant of £9000, and each professor a salary of £1000, with a free residence. There are at present 120 matriculated students, and its degrees rank on the same level with those of the English Universities. It has an excellent museum. Melbourne supports four theatres, and during the last few years nearly all the handicrafts which contribute to the comfort and refinement of civilised existence have here taken root. Melbourne stands high for the support it gives to literature and science. It has a Free Library containing about 90,000 volumes; an Observatory fitted up with the best instruments, among which is one of the largest and most perfect reflecting telescopes in the world; and Botanical Gardens which are extensive and beautiful, and which contain one of the richest collections of Australian and exotic plants ever brought together. The Public Library is a noble institution, being open free to all comers from ten in the morning till ten at night, six days a week; and we have Mr. Trollope's testimony that any book required can be had without trouble or delay. The water-supply of this great city is one of the most ample in the world. The valley of the Plenty (a tributary of the Yarra-Yarra) is dammed up at Yan-Yean, about 20 miles N.N.E. of Melbourne by an embankment more than half a mile long, forming a lake nine miles in circumference, with an area of 1330 acres, and a maximum depth of 25 feet. It holds 6400 million gallons of water, and is capable of supplying the city for more than two years at the rate of 30 gallons per head per day for 200,000 persons. The water is conveyed by a double set of immense pipes, with safety-valves at intervals to limit the pressure. The total cost of the works, with maintenance to June 1876, was £1,388,564.

Ballarat, the great gold-field city, ranks next to Melbourne in importance and population. It is situated in Grenville county, 104 miles W.N.W. of Melbourne, on the southern side of the Dividing Range, and at an elevation of 1437 feet above the sea. It has 47,156 inhabitants, of whom 1372 are Chinese. It is a spacious and well-built town, and though only twenty-five years old possesses most of the advantages and institutions of old cities. It has schools, hospitals, free libraries, and public gardens, and it is situated in a fine undulating country. In addition to the gold mines which created and still largely support the town, the district around Ballarat is well suited for agriculture, wheat, barley, oats, and potatoes being extensively grown; while the pastures are so excellent

that the wool produced in the neighbourhood commands the very highest price in the market.

Two other towns in Victoria have populations of above 20,000—Sandhurst and Geelong.

SANDHURST, formerly called Bendigo, is situated in Bendigo county, and on the Bendigo Creek, 100 miles N.N.W. of Melbourne, on the line of railway to Echuca. It is now the greatest mining centre in the colony, and has a population of about 27,000 persons. Although still bearing traces of its origin as a mining settlement, it has many fine buildings, as well as parks and botanical gardens; but in general appearance and situation, as well as in population, it is very inferior to Ballarat. The Sandhurst district gives employment to 6572 miners, of whom 1062 are Chinese. It also has 255 steam engines, and there are 776 distinct gold-bearing quartz reefs. The yield of gold is between four and five hundred thousand pounds worth annually.

GEELONG, situated on the west side of Port Phillip Bay, and 45 miles south-west of Melbourne, in the county of Grant, is an important seaport, and a comparatively old town, with 23,200 inhabitants. The first woollen mill was established here, and there are now several such mills manufacturing cloth, tweeds, and various kinds of woollen fabrics. There are also meat-preserving works here, and extensive tanneries. The town is pleasantly situated, and is well laid out on ground sloping to the bay and the Barron River. Its Mechanics' Institute has a library of over 11,000 volumes, and it possesses two parks and a botanical garden. There are four jetties, alongside which the largest ships can load and discharge.

Next we have a group of six towns whose populations range between five and ten thousand—viz. Castlemaine, Clunes, Daylesford, Eaglehawk, Stawell, and Williamstown.

CASTLEMAINE, in the county of Talbot, 77½ miles N.N.W. of Melbourne, on the railway to Echuca, is an important mining town of 7300 inhabitants. The district supports 5446 miners, of whom 1872 are Chinese. The district is also to a moderate extent agricultural and pastoral.

CLUNES, also in the county of Talbot, 120 miles north-west of Melbourne, is situated on the Creswick Creek, and on the railway from Ballarat to Dunolly. It has about 7000 inhabitants. It depends chiefly on the quartz mines in the neighbourhood.

DAYLESFORD, also in the county of Talbot, 78 miles north-west of Melbourne, is situated on the Wombat Creek, near the source of the Loddon River, and has about 5000 inhabitants. Mining, both alluvial and quartz, is the principal business of the people; but there is also a considerable quantity of land in cultivation.

EAGLEHAWK, in Bendigo county, only 4½ miles from Sandhurst and 105 from Melbourne, is a mining town situated in a hilly district, abounding in quartz lodes. The population is about 7750, and it has a handsome park. The gold mines are very productive, and the prosperity of the town almost wholly depends on them.

STAWELL, in Borung county, 177 miles north-west from Melbourne, is the terminus of the Geelong, Ballarat, and Ararat railway, from which latter town it is 18 miles distant. It has nearly 7000 inhabitants, and is the centre of the rich Pleasant Creek gold-field. It contains the deepest and richest mines in the colony, the Newington mine being 1940 feet deep. There is also a large agricultural population, and wheat and oats are largely produced.

WILLIAMSTOWN, in the county of Bourke, is situated on the south-west shore of Hudson's Bay, only 8 miles from Melbourne. It is a seaport, with commodious piers and docks, and has a population of over 7000 ; but it may be almost considered as a suburb of Melbourne.

The following is an enumeration of the towns with populations between one and five thousand, with their positions, populations, and specialties :—

ALEXANDRA, in Anglesea county, 98 miles north-east of Melbourne, situated on the Goulburn River, is a town in the Beechworth mining district, with a population of about 1100. Much gold has been obtained here, and wheat, oats, and potatoes are largely grown.

AMHERST, county of Talbot (formerly Daisy Hill), 111 miles north-west of Melbourne, is a mining and agricultural town, with a population of nearly 3000. The mines are both alluvial and quartz, and there are about 670 miners at work.

ARARAT, in the county of Ripon, close to the Pyrenees mountains and near the source of the Hopkins River, has a population of about 4000. The district is equally celebrated for mining and agriculture, and there are also great supplies of timber, which is sent widely over the colony. There are more than 3000 miners, In 1876-77 more than 25,000 bushels of wheat were produced, and 152 tons of potatoes, besides more than 8000 gallons of wine.

BEECHWORTH, in the county of Bogong, 185 miles north-east of Melbourne, and about 25 miles from the Murray River, is the principal town of the celebrated Ovens gold district, and has about 3200 inhabitants. It is 1725 feet above the sea-level, and has a branch railway from the north-eastern line. About 5700 miners

are employed in the district. It is also very rich in agriculture, 16,500 bushels of wheat and 15,000 gallons of wine having been produced in 1876-77.

BELFAST, in the county of Villiers, is a seaport at the mouth of the river Moyne, 168 miles W.S.W of Melbourne, and with 2500 inhabitants. It is surrounded by a good agricultural district, and has a large trade in wool and other produce from the surrounding country and the interior.

BENALLA, in the county of Delatite, on the Broken River, 122 miles north-east of Melbourne, has a population of 2000. It is in an important agricultural and pastoral district, well suited for growing grain and fruits. It contains over half a million of sheep, and has about 35,000 acres of land under cultivation.

CAMPERDOWN is the chief town of the county of Hampden, 120 miles W.S.W. from Melbourne and 75 from Geelong. The district around is mostly pastoral. The population is about 2000.

CARNGHAM, in Grenville county, 17 miles from Ballarat, is an agricultural and mining town, with 1700 inhabitants.

CHILTERN, in Bogong county, 180 miles north-east of Melbourne, on the North-Eastern Railway, with 1300 inhabitants. It is in an agricultural and pastoral district, producing annually more than 8000 bushels of wheat.

CRESWICK, in the county of Talbot, 109 miles north-west of Melbourne and 11 from Ballarat, is an important gold-fields town, with 4000 inhabitants. The district is also agricultural, producing 90,000 bushels of wheat, 10,000 tons of potatoes, and 2000 gallons of wine.

DUNOLLY, in the county of Gladstone, 107 miles north-west of Melbourne, has a population of 1550. It is in a gold-field which produced one of the largest nuggets in the world, weighing 2280 ounces. It is also the centre of a large agricultural district.

ECHUCA, in the county of Rodney, is a border town on the Murray River, 166 miles north of Melbourne, and the terminus of the Murray Railway. The district is pastoral and agricultural, and the population 2900. There are extensive vineyards and many saw-mills ; and as a port for the navigation of the Murray and its branches the town is of great importance. There are 35 river steamers, and Echuca is sometimes called the Chicago of Australia.

HAMILTON, in the counties of Dundas and Normanby, 219 miles west of Melbourne, is the chief town of the western district, and has a population of about 4000. It is connected with Melbourne by railway *viâ* Ararat, and is the centre from which coaches proceed to all the chief places in the west. It has two important colleges.

The district is pastoral and agricultural, and exhibitions of stock and produce are held twice a year.

HEATHCOTE, in the county of Dalhousie, 70 miles north of Melbourne and 30 east of Sandhurst, is situated in the centre of the M'Ivor gold-field, and has about 1600 inhabitants. It is prettily situated on a valley at the foot of Mount Ida, and is wholly dependent on the surrounding gold mines.

INGLEWOOD, in the county of Gladstone, 128 miles N.N.W. of Melbourne and 28 from Sandhurst, is a mining town of about 1300 inhabitants.

KILMORE, in the county of Dalhousie, 39½ miles north of Melbourne, on the North Eastern Railway, has a population of 1600. The district is agricultural, the land being volcanic and very fertile, so as to produce large crops of wheat.

KOROIT, in Villiers county, 200 miles south-west from Melbourne and 12 miles from Belfast, is in an agricultural district, and has a population of about 1700.

KYNETON, in the county of Dalhousie, 52 miles north-west of Melbourne and 1750 feet above the sea-level, is an important agricultural and mining town, with a population of nearly 3000. It is situated on the river Campaspe, and has several manufactories of implements and coaches. The district produces annually nearly 100,000 bushels of wheat, and 3750 tons of potatoes. The mining, though tolerably extensive, is less important than the agriculture.

MALDON, in the county of Talbot, 84½ miles N.N.W. of Melbourne, is an important mining and agricultural town, with over 3800 inhabitants. It is situated on the Tarrangowar Creek, about 12 miles from Castlemaine. The surrounding quartz reefs are extensive and rich, supporting over 600 miners; and nearly 8000 acres of wheat are grown, besides other crops.

MALMESBURY, in Talbot county, 63 miles north by west of Melbourne on the road to Castlemaine, is an agricultural town of about 1400 inhabitants, with some alluvial and quartz mines in the neighbourhood.

PORTLAND, the chief town of the county of Normanby, a seaport town on Portland Bay, 225 miles west of Melbourne, with a population of 2400, and having, like its English namesake, a fine breakwater (now in course of construction). The surrounding country is agricultural and very rich. Its chief exports are cattle, wool, butter, and corn. Portland is the oldest town in the colony, having been founded in 1834.

SALE, in the county of Tangil, is the chief town of Gipps Land. It is situated on the Thompson River, 140 miles E.S.E. of

Melbourne, and has a population of about 3200. The district is pastoral, agricultural, and mining. Hops are largely cultivated.

SEBASTOPOL, in the county of Grenville, 99 miles from Melbourne and 3 from Ballarat, is a mining town of 4600 inhabitants.

SMYTHESDALE, in the county of Grenville, 108 miles west by north from Sydney and 12 miles from Ballarat, is a mining town of somewhat over 1000 inhabitants, but doing a large trade with the surrounding district, which supports about 1700 miners and a population of 14,000.

ST. ARNAUD, in the county of Kara-Kara, 164 miles north-west of Melbourne, is a town of 2700 inhabitants, in a mining, pastoral, and agricultural district. Silver is found here as well as gold.

STEIGLITZ, in Grant county, 71 miles west of Melbourne, and 7 miles from Meredith on the Geelong and Ballarat Railway, is a small mining town of about 1100 inhabitants. The gold is obtained from quartz reefs, and 268 miners are employed.

TALBOT, in the county of Talbot, 130 miles north-west from Melbourne on the Black Creek and the railway from Ballarat to Dunolly, is an important mining and agricultural town of over 4000 inhabitants. There are extensive alluvial workings and some quartz reefs, and more than 7000 acres of land are under cultivation. The town contains flour-mills, soap and candle factories, and is lighted with gas. It has also a large State school called the Prince Alfred.

TARNAGULLA, in the county of Gladstone, near the Loddon River, 125 miles north-west of Melbourne, is a quartz-mining town of 1360 inhabitants. Agriculture is increasing in the neighbourhood, while gold-mining is diminishing.

WALHALLA, in the county of Tangil, 129 miles east of Melbourne, in a valley enclosed by steep hills, is a mining town of 1550 inhabitants. The reefs here are very rich, one company, "The Long Tunnel," having paid £300,000 in dividends during eight or nine years; and this is only one of many successful companies.

WANGARATTA, in Bogong county, 159 miles north-east from Melbourne at the junction of the Ovens and King Rivers, is an agricultural town with nearly 2000 inhabitants. Besides grain, grapes, oranges, and tobacco are largely cultivated, and there are several large sheep and cattle stations.

WARRNAMBOOL, in the county of Villiers, is a seaport town of between 4000 and 5000 inhabitants, 170 miles south-west of Melbourne. It has a good harbour, and does a large trade in wool, grain, and dairy produce. The surrounding country is richly agricultural and pastoral, and bacon is largely exported.

WEDDERBURN, in the county of Gladstone, 147 miles N.N.W. of Melbourne, is a mining town of 1600 inhabitants. Quartz-mining is the principal industry, but wheat and grapes are also grown in considerable quantities.

WOODEND, in the county of Dalhousie, 49 miles from Melbourne on the Castlemaine road and railway, and just over the Dividing Range, is an agricultural town of 1500 inhabitants. Mount Macedon and the celebrated "Hanging Rock" are in the vicinity.

9. *Government, Religion, Public Institutions, Education, etc.*

The government of Victoria is similar in form to that of New South Wales, but is much more democratic, both Houses of Parliament being elective. The Legislative Council (or Upper House) consists of thirty members representing the six provinces, whose tenure of office is ten years; the qualification of voters being freehold or leasehold property of £50 annual value. The Legislative Assembly (or Lower House) consists of seventy-eight members elected for three years by manhood suffrage. All the voting is by ballot. Members of both houses are paid £300 per annum each. The executive consists of the Governor and a ministry termed the Executive Council.

State aid to religion was abolished in Victoria in 1875, and all the churches are now self-supporting. Dividing the several churches into Church of England, Dissenters, and Roman Catholics, their proportionate numbers, as determined by official returns of the average attendance at their several places of worship during 1875, are as follows:—Church of England, 39,275; Dissenters, 177,440; Roman Catholics, 38,486. Among the Dissenters the Wesleyans are the most numerous, having an average attendance of 76,187. The census returns of 1871, however, give very different proportions, making the Episcopalians highest, 257,835; then Roman Catholics, 176,620; Presbyterians, 112,983; and Wesleyan

Methodists, 94,220. The Episcopalians are thus made nearly equal to all the Protestant Dissenters.

Education in Victoria is free, secular, and compulsory since January 1873. It is under a minister of education, in whom all school properties are vested. The number of schools in 1875 was 1410, besides 396 private schools. There are also five colleges and grammar schools, two ladies' colleges, and the Melbourne university, whose degrees and diplomas are equivalent to those of any similar institution in the United Kingdom. It has a Government endowment of £9000 a year. There are also 1430 Sunday schools in the colony, with an average attendance of 108,388 scholars. Government also grants £60,000 annually to hospitals, £25,000 to asylums, and £86,000 to lunatic asylums. The Botanical Gardens and Observatory of Melbourne are also public institutions supported by the general Government.

CHAPTER IX.

THE COLONY OF SOUTH AUSTRALIA.

1. *Origin, Geographical Limits, and Area.*

SOUTH AUSTRALIA was established as a separate colony in 1834, at which time the name was appropriate, the only other colonies on the continent being New South Wales and Western Australia. Now that Victoria has been separated and South Australia has been extended to the northern coast the old name is somewhat misleading.

The colony now includes the entire central division of Australia, extending from the south to the north coasts, and from the meridian of 129° E. longitude on the west side to 141° on the east in the southern, and 138° in the northern, half. It is bounded on the west by Western Australia; on the east by Victoria, New South Wales, and Queensland; on the north by the Arafura Sea, and on the south by the Southern Ocean. It thus has an extreme length of nearly 2000 miles by a width of 700, and contains 914,730 square miles. Of this enormous area little more than one-tenth is settled, though many fertile spots in the far interior are now being occupied by pioneer squatters.

2. *Physical Features.*

South Australia has no such well-marked and easily described physical features as the eastern colonies. It has no great mountain range dividing up the country into distinct regions, no great system of river valleys, and no

SOUTH AUSTRALIA. Southern Part.

London: Edward Stanford, 55 Charing Cross.

great geological contrasts of ancient and recent deposits. Yet it is sufficiently diversified in its outlines, having magnificent plains of fertile land, mountain ranges well wooded with giant Eucalyptus, lovely valleys, and arid plains, timberless, waterless, and desolate, yet often teeming with metallic wealth beneath the surface. The character of the interior has already been sufficiently indicated in our account of Australian exploration; we will therefore, here confine ourselves to a sketch of the more prominent physical features of the settled districts.

The old colony of South Australia is generally flat, as compared with Victoria or New South Wales. A range of mountains of no great height commences at Cape Jervis on the eastern extremity of St. Vincent's Gulf, and extends northward at the back of Adelaide to the Lake Torrens country. It is called the Lofty Range near Adelaide, farther on the Barossa, the Belvidere, the Bryan, and the Flinders Ranges. The highest point does not much exceed 3000 feet. In the southern portion of the colony are Mount Gambier and other extinct volcanoes, while in the unsettled country of the Eyre Peninsula are the rugged Gawler Ranges about 2000 feet high.

With the exception of the Murray, which runs across the southern portion of the colony, there are no rivers of importance in South Australia; the Gawler, Torrens, and other streams that flow into St. Vincent's Gulf being very insignificant, and almost or quite dry for a large portion of the year.

None of the Australian colonies have so many large lakes as South Australia; but, unfortunately, none of these seem calculated to benefit the country, being either salt, or liable to be dried up, or unfitted for navigation. Lake Torrens is often a muddy swamp; Lake Gairdner, to the north of Eyre Peninsula, is an immense salt lake in a desert region, though situated 366 feet above the sea-level.

Lake Eyre and a cluster of smaller lakes are also salt and liable to become changed into plains of saline mud, as is the still more extensive Lake Amadeus in the centre of the continent. Lake Alexandrina, forming the mouth of the Murray, is fresh, but by dispersing the waters of that large river it renders its entrance from the ocean unnavigable. The only lakes associated with picturesque scenery and fertile country are those of the Mount Gambier region, which are situated in the craters of extinct volcanoes. One of these—the "Blue Lake"—is of an oval shape, surrounded by precipitous walls covered with verdure and several hundred feet high. It is 240 feet deep, and the water is of a deep blue colour.

Although without any very prominent features, South Australia contains a great variety of soils and scenery. Extensive plains, comprising many millions of acres of arable land for the most part free from timber, extend from 20 miles south of Adelaide to beyond Mount Remarkable, about 170 miles north of the city. These plains are bounded on the eastern side by the mountain chain already described. Beyond this range, to the east and north-east, the country is broken and hilly, with much timber, and a large extent of very rich land. The valley of the Murray, itself from half a mile to a mile wide, bounded by cliffs of recent shell-limestone, is a rich alluvial deposit covered in places with large gum trees; but between this valley and the eastern boundary of the colony (as well as for some distance on the west), extend vast waterless scrubs such as have already been described, till, farther south, we come to the rich agricultural and pastoral district of Mount Gambier. Much of the scenery of South Australia is park-like and beautiful, with alternations of hill and valley presenting every variety of landscape; but large areas are sterile and uninviting, and apparently doomed to perpetual aridity and barrenness.

Yet much of the scrub land is now found to be well adapted for growing wheat, and considerable tracts, once thought to be wholly unsuited to agriculture, are now returning abundant harvests.

3. *Climate, Natural History, and Geology.*

Although so far south, and therefore farther from the tropics and geographically more temperate, yet South Australia is very hot, and perhaps suffers more from excessive heat and drought during the summer months than any of the other colonies. This is, no doubt, largely due to the absence of a lofty mountain range to cut off the hot winds from the interior—the South Australian range having a north and south direction—and also to its coast being concave instead of convex, and, therefore, less open to the cool sea-breezes from the south and south-east. December, January, and February are very trying months, the thermometer often rising at Adelaide to 110° or 115° in the shade; but the rest of the year is pleasant, and the winter is mild and rainy.

The usual rainfall is small, only averaging 22 inches, but it is often as low as 15, and in 1869 was only 13½ inches. The wettest year was 1851, when there were 30½ inches. The amount of rainfall varies greatly in different parts of the colony. In the wet year 1861, when there were 24 inches at Adelaide, there were only 7 inches at Port Augusta at the head of Spencer's Gulf, 45½ at Mount Lofty, and 55½ inches at Mount Barker. In the same year the thermometer rose above 90° on forty-five days at Adelaide, but only on five days at Guichen Bay in the southern part of the colony. The variations of the barometer indicate changes of wind rather than rain. It always falls with a north-east wind, and continues to fall as the wind changes to north and

north-west; but whenever there is southing in the wind the barometer rises even during steady and copious rains.

The natural history of South Australia presents hardly any distinctive features, while in almost every department it is far poorer than the other colonies. In botany this is especially the case. It contains a mixture of eastern, western, and tropical forms,—the presence of the latter being due to the proximity of the great central desert; but the eastern types abound. The northern territory has of course a wholly tropical flora, and it has produced many new species both of plants and animals; but these in almost all cases extend to one of the adjoining colonies, West Australia or Queensland, whose northern portions are equally tropical.

The geological structure of extra-tropical South Australia is comparatively simple. It consists of an immense formation of Tertiary sandstones and limestones, extending over the whole country, except where interrupted by Palæozoic or volcanic mountains. The backbone of the colony, running from Cape Jervis northwards, is Silurian, and consists of sandstones, slates, and limestones, with intruding granites of diversified character. Fine red granites occur at Barossa and Port Lincoln, and there are lofty granite mountains in the interior. Basalt occurs at Mount Arden, north of Port Augusta, and also farther north in the central lake country; but it is more common in the south-east, near the remarkable group of extinct volcanoes in the Mount Gambier district. A little to the north, in the Tertiary limestone country of the Mosquito plains, are some very curious and interesting caves, which have been thus described by the Rev. Mr. Woods, in his *Geological Observations in South Australia*:—"In the midst of a swampy, sandy country, plentifully covered with stringy-bark trees, a series of caverns is found, whose internal beauty is at strange variance with

the wildness of the scenery around. The entrance is merely a round hole on the top of a hill, which leads to a small sloping path under a shelf of rock. Descending this for about 25 feet, one gets a first glimpse of the magnificence enshrined below. The observer finds himself at the entrance of a large oblong square chamber, low, but perfectly lighted by an aperture at the opposite end, and all around, above, and below, the eye is bewildered by a profusion of ornaments and decorations of nature's own devising. It resembles an immense Gothic cathedral, and the numbers of half-finished stalagmites which rise from the ground, like kneeling or prostrate forms, seem worshippers in that silent and solemn place. At the farther end is an immense stalactite, which appears like a support to the whole roof; not the least beautiful part of it being, that it is tinted by almost every variety of colour, one side being of a delicate azure, with passages of blue, green, and pink, intermingled; and again, it is snowy white, finally merging into a golden yellow. The second cave or chamber is so thickly studded with stalactites that it seems like a carefully arranged scene, which, from the interminable variety of form and magic effect of light and shade, might easily be taken to represent some fairy palace. Very soon the cavern becomes as dark as night, and further exploration to the numerous chambers and fissures beyond has to be made by the assistance of torches. On leaving the last chamber we return to the light: a narrow passage, richly wreathed with limestone, is observed on the right hand going out. Proceeding a little way down, a large vaulted chamber is reached, so perfectly dark and obscure that even torches can do but faint justice to its beauty. Here, above all other portions of the caves, has nature been prodigal of the fantastic ornament with which the whole place abounds. There are pillars so finely formed, and covered with such deli-

cate trellis-work, there are droppings of lime making such scroll-work, that the eye is bewildered with the extent and variety of the adornment. It is like a palace of ice, with frozen cascades and fountains all around."

The Palæozoic limestones of South Australia are very rich in copper, and this metal has really determined the success of the colony. It was first discovered in the hills near Adelaide; but the most important mine, the Burra-Burra, is about 90 miles to the north. Another still more extensive deposit of copper ore is at Wollaroo, at the head of Yorke's Peninsula, and there are in all twenty-seven copper mines in the colony. Silver-lead has been found and worked near Cape Jervis, and bismuth in the mountains east of Adelaide. Gold also occurs at Echunga; but the mines are unimportant as compared with those of Victoria. Iron is also known to exist in large quantities; but, as there is no coal, it has not yet been worked.

4. *Colonisation, Population, etc.*

South Australia differs from most of the other colonies of Australia in its origin and early history. It was established in 1836 by bodies of emigrants from Great Britain, sent out under the auspices of the South Australian Colonisation Association, which had obtained a grant of the lands of the colony from the Imperial Government. It thus escaped the evils of contamination by convicts; but it passed through much adversity in its early days, and it was only when the Burra-Burra mines proved such a splendid success (in 1846) that the colony began to make substantial progress. These mines yielded, in the first three years' working, 10,000 tons of copper, and this metal has been to South Australia what gold has been to Victoria, and coal to New South Wales.

The growth of the colony was at first slow. In 1840

there were 14,000 people, but in 1850 these had increased to 63,700; and although a considerable exodus took place during the gold-fever of 1851 and 1852, so that it was thought the prosperity of the country would be endangered, a reaction soon took place, and South Australia received its share of benefit from the growing wealth of its sister colonies. Thus we find that in 1860 the population had more than doubled, being 126,830. Since then the increase, though less rapid, has been steady. In 1870 there were 183,800 persons, and in June 1877 the population was estimated at nearly 231,000. There are in the settled districts about 3000 aborigines; but though these people are perhaps better treated and more cared for here than in the other colonies, they diminish year by year. The civilised population consists almost entirely of English and Germans, there being very few Chinese or other foreigners, for most of whom the gold of the adjoining colony of Victoria has greater attractions.

5. *Productions, Trade, Shipping, etc.*

South Australia is the agricultural colony of Australia, and is pre-eminent in wheat, and perhaps also in wine. Nearly a million and a half acres of land were under cultivation in 1877, and of these over a million were cropped with wheat. The produce varies greatly. It averaged between eleven and twelve bushels an acre in 1875-6, but only about five bushels in 1876-7. The land is very imperfectly cultivated; no manure is applied; and many successive grain crops are taken from the same land. Yet the dry warm climate is so suitable for wheat, that sufficient is produced to export largely to the other Australian colonies, and occasionally to England. The climate is equally favourable for vines, which are exten-

sively grown—there being between four and five thousand acres of vineyards, producing over 700,000 gallons of wine. This, however, does not yet command a good price, and a small proportion of it only is exported. Fruits of various kinds are also largely grown; raisins and currants are being dried, and manufactories for fruit-preserving established. In the specially Australian product, wool, South Australia is far inferior to Victoria and New South Wales as regards the actual quantity produced, though, in proportion to its population, it about equals them. In 1876 it had more than six millions of sheep, and exported between thirty and forty million pounds of wool, or about one-third that exported by New South Wales, with barely more than one-third the population.

In minerals South Australia takes the lead in the production of copper, which is still exported to the amount of over half a million sterling per annum. Other metals are worked,—as bismuth, lead, and gold; but these are of comparatively little importance; so that the total mineral produce of 1866 was only a little over £600,000.

The most important manufactories of the colony are those of agricultural implements, necessitated by the enormous area of land under cultivation, with a very limited supply of labour.

The shipping belonging to Port Adelaide amounts to about 230 vessels, ranging in size from 8 to 700 tons. About 40 steamers and 50 barges are employed in the navigation of the rivers Murray, Murrumbidgee, and Darling. There are also two regular lines of steamers between Adelaide and Melbourne, while the Peninsular and Oriental Company's steamers from Southampton touch monthly at Glenelg, six miles south of Adelaide.

6. *Roads, Railways, and Telegraphs.*

As in other Australian colonies, railways may be said to have superseded roads before the latter were made. There are in the whole colony only 1013 miles of properly constructed roads, all in the vicinity of the larger towns, while about 2000 miles of additional road are laid out and partially constructed. Most of the communication, even by mail coaches, is carried on by mere tracks through the bush, without the vestige of anything that can be called a road.

The railways are not yet very numerous, as South Australia has a more extensive sea-coast than most of the other colonies, and is thus able to make use of water communication. There were, up to 1877, about 317 miles of railway, while a considerably larger mileage is either in contemplation or in actual progress. The most important lines are those to the Burra-Burra mines, and to Port Adelaide, a distance of 108 miles; a branch line to Kapunda, 18 miles; a line to Glenelg, 7 miles; the Port Wakefield and Blyth Railway, 42 miles; and the Port Pirie and Gladstone line, 33 miles. In the south is the Kingston and Naracoorte Railway, 51 miles; and there are also several branches and tramways. The project has been much discussed of making a railway across the continent from Port Augusta to Port Darwin, a distance of nearly 1800 miles; but, with the present scanty population in the northern territory, or even with any probable increase of it, such a line could only be worked at a heavy annual loss, even were the expenditure (supposed to be about ten millions) recouped by the increased value of land along the line. It is hardly likely, therefore, that the present generation will see the scheme carried out.

In the construction of electric telegraphs, however, South Australia has far exceeded all the other colonies;

for, besides providing for the wants of its own settled districts and taking its share in the communication with other colonies, it has accomplished the gigantic work of forming and successfully working the overland line, by which daily communication is kept up between the Australian continent and the rest of the civilised world. This great work was completed in August 1872. It very nearly follows the line of M'Douall Stuart's exploration, and is 1973 miles long. It was divided into three sections, the southern of which was executed by contract, the middle section was made by the Government, and the northern section, though contracted for, presented such difficulties that it was obliged to be completed by the Government. Almost the whole of the distance was through uninhabited country, and much of it a waterless desert. Drought was the enemy in one part, while sudden floods impeded the work in others. Every article of food, and all materials, had to be carted out for enormous distances to supply the army of workmen employed. Camels were largely made use of to carry the telegraph poles, 36,000 of which were of wood, and the remainder iron. The wooden poles, prepared at the nearest available localities, had all to be carried distances varying from 1 to 350 miles, while the iron poles had to be taken an average distance of 400 miles by land carriage. In addition to the poles, stations had to be formed at intervals, and over 2000 tons of materials had to be carried into the interior, while thousands of cattle and sheep, for the support of the workmen, had to be driven for distances up to 1300 miles. For a distance of 500 miles wide tracks had to be cleared through forest and scrub. The total cost of this line was £370,000; and it is a remarkable and highly creditable fact, that such a truly international work should have been completed at the sole cost of one of the less prosperous of the Aus-

tralian colonies. Not content with this great and as yet unprofitable undertaking, South Australia has since completed her share of a line along the inhospitable southern coast to West Australia, a portion of which, between Fowler Bay and Eucla, on the West Australian boundary, presented great difficulties, owing to extreme scarcity of water and herbage.

7. *Political Divisions—Cities and Towns.*

South Australia is divided into counties, for electoral purposes, and into districts, which have municipal government. The counties, till recently, were twenty-five in number, but they have lately been increased to thirty-five. There are also four pastoral districts known as Western, Northern, North-eastern, and Kangaroo Land. The older counties are as follows:—FLINDERS, on Eyre Peninsula; FERGUSSON, on Yorke's Peninsula; DALY, VICTORIA, FROME, and DALHOUSIE, on the east of Spencer's Gulf; STANLEY, GAWLER, ADELAIDE, and HINDMARSH, on St. Vincent's Gulf; KIMBERLEY, BURRA, YOUNG, HAMLEY, ALFRED, ALBERT, EYRE, LIGHT, and STURT, to the east of the more settled districts; RUSSELL, CARDWELL, BUCKINGHAM, MACDONNELL, ROBE, and GREY, in the south-east district. There are also CARNARVON (Kangaroo Island); and LYTTON, DERBY, NEWCASTLE, GLANVILLE, BLACKFORD, HANSON, TAUNTON, MUSGRAVE, and HERBERT, farther in the interior.

ADELAIDE, the capital of South Australia, has a population of about 30,000, or, with the suburbs, as estimated in the other capitals, more than 50,000. It is laid out with the utmost regularity, the streets all directed to the cardinal points — north, south, east, or west; and it has many fine public buildings, the finest of all being the Post-Office. It is situated in a plain, on the small river Torrens, which is unfortunately dry for a good part of the year; but the Mount Lofty range is within a few miles, on the east, and gives interest and variety to the scenery. In these hills reservoirs have been constructed, capable of storing more than a

thousand million gallons of water for the supply of the city. The Botanic Gardens are extensive and well laid out, and, next to those of Sydney, are the most beautiful in Australia. Adjoining these is an extensive park. The churches are numerous and handsome. Fine new Houses of Parliament are in process of erection, and the South Australian Institute has a library of nearly 20,000 volumes.

Owing to the agricultural pursuits of most of the population, South Australia has very few large towns besides the capital. None of these possess 5000 inhabitants, and those that exceed 1000 are not many. The following list comprises all given in *Gordon and Gotch's Australian Handbook*, for 1878.

GAWLER, a town of 1400 inhabitants, situated on the Gawler River, at the foot of the Barossa Mountains, 25 miles north-east of Adelaide. It is in the centre of a large wheat-growing district, and there are also a few gold and copper mines in the neighbourhood.

GLENELG, a watering-place, almost a suburb of Adelaide, being distant only 6½ miles. Its population is over 2000. The Peninsular and Oriental steamers call here for the mails.

KADINA is a town in the northern part of Yorke's Peninsula, 96 miles north-east of Adelaide. It owes its prosperity to the rich copper mines in the vicinity, and with the neighbouring mines has a population of about 4000.

KAPUNDA is also a mining town, 48 miles north-east of Adelaide, with a population of 2300. Besides the rich copper mines, it is surrounded by a fine agricultural district.

KOORINGA, a town with a population of about 1500, situated 101 miles north of Adelaide, owes its importance to the vicinity of the celebrated Burra-Burra mine, which in thirty-one years has yielded copper ore of the value of £4,000,000. Silver, lead, and other ores exist in the neighbourhood, but have not yet been much worked. Large quantities of land to the north of the town are under wheat cultivation.

MOONTA is one of the largest of the mining towns of South Australia, situated on the shores of Spencer's Gulf, 99 miles north-west of Adelaide, 12 from Wallaroo, and six from Kadina. The Moonta mines give regular employment to 1500 persons, and there are several other mines near, so that the total population is nearly 5000. Since their discovery in 1861, the Moonta mines have yielded copper ore valued at £2,761,787.

PORT ADELAIDE is the chief seaport of the colony, 7½ miles from the capital, and with a population of 2885. It has a pier 1800 feet long and a lighthouse, and it is in contemplation to build extensive docks.

WALLAROO, the seaport of the copper-mining district on the

shores of Spencer's Gulf, has a population of over 2000, and is entirely dependent on the mines, smelting furnaces, and the imports and exports for the support of the mining population.

8. *Government, Public Institutions, Education, etc.*

The South Australian Government consists of a Governor appointed by the Crown; a Legislative Council elected by a vote of the whole colony as one district, but by electors having a property qualification; and a House of Assembly, whose members are elected in each county by manhood suffrage. The Executive Council consists of nine members (who must be Members of Parliament) besides the Governor. The Legislative Council cannot be dissolved by the Executive, and is only changed by one-third of its members retiring every four years. The Legislative Council consists of eighteen, and the House of Assembly of forty-eight members.

In this colony the voluntary principle, as regards religious sects, has been in force ever since its foundation, no aid from the State having ever been given for any exclusively religious purpose. The Wesleyan Methodists are by far the most numerous of the sectarian bodies, judged by the sittings provided for their congregations; next come the Church of England, followed by the Roman Catholics, Congregationalists, Baptists, and other dissenting bodies. By the census returns, however, the members of the Church of England are returned as nearly double the Wesleyans, who are about equalled by the Roman Catholics.

Education is being liberally and efficiently dealt with. By the last Act of Parliament on the subject (1875), there is a council with a salaried president and staff of officers responsible to the Minister of Education. The excellent plan is adopted of setting apart every year grants of public lands, whose revenues are to be devoted

to school purposes. Thus, as the population increases, the natural increase in the value of the land will provide a constantly increasing revenue for the maintenance of an efficient education. Teachers are all paid by Government, supplemented by small school-fees. The instruction is secular, but the Bible may be read without note or comment; and it is compulsory, but the fees are remitted to all who are not able to pay them. £60,000 a year has been voted for school-buildings, and a similar amount for salaries and other expenses, besides grants of land for all school sites. A university has also been established, towards the endowment of which two wealthy colonists have contributed £20,000 each. At the end of 1866 there were 247 public schools in operation, and over 28,000 children under instruction. There are also several good schools in connection with the Church of England and other religious bodies.

As in the other Australian colonies, public libraries exist in all the larger town and villages, mostly in connection with the South Australian Institute at Adelaide. The value of such libraries may be estimated by the fact, that during 1876 nearly 86,000 volumes were circulated by the various local libraries, and nearly 60,000 by that of the capital.

9. *The Northern Territory.*

This portion of the colony, formerly called Alexandra Land, embraces an enormous area, extending from the 26th parallel of south latitude to the shores of the Arafura Sea. As a settled country it is limited to the few stations on the overland telegraph line, and the small settlement in the neighbourhood of Port Darwin, where the overland telegraph joins the submarine line to Java. Port Darwin is a fine harbour, said to be only second in magnitude and importance to Port Jackson, and it has

been made an entirely free port since 1875. The country is comparatively level, rising in the interior to table-lands of moderate altitude. Being situated in 12° 30′ south latitude, the climate is of course perfectly tropical; but though hot it is not oppressive, as the mornings and evenings are cool. The rainfall is about 60 inches. The flora is decidedly Australian in character, most of the common forms of the temperate regions being present, but interspersed with palms, bamboos, rattan-canes, wild nutmegs, and other tropical forms. The indigenous fauna too is strictly Australian, but the Indian buffalo and the Timor pony have run wild, and are said to be rapidly increasing; while crocodiles, dugongs, and turtles abound on the coast. Gold, copper, tin, and lead have been discovered, and several gold companies are already at work, some of which have made good returns. From twelve to fifteen thousand ounces of gold are exported annually, and it is believed that the supplies are very large. Much of the table-land is poor, being covered with the hopeless spinifex and scrub, but many of the lowlands and river valleys are extremely rich, and will some day support a large population. A road has been made to the gold-fields 160 miles from the port. The total population of the territory is probably under a thousand. The only towns are Palmerston, the capital and terminus of the overland telegraph, and Southport, on the Blackmore River, 24 miles to the south. Although Palmerston has only about 200 inhabitants, it has good public buildings, churches and chapels, six hotels, and a weekly newspaper. The Government consists of a President and Secretary, in constant communication with Adelaide by telegraph. The most recent reports state that a trade is springing up with Java, mining is improving, and land is being taken up for agricultural purposes.

CHAPTER X.

THE COLONY OF WEST AUSTRALIA.

1. *Origin, Geographical Limits, and Area.*

THIS colony was founded in 1829 by the Home Government, but at first very little progress was made, so that in 1848 the population only amounted to 4622. In 1850, owing to the want of labour and excessive commercial depression, West Australia asked to have convicts sent to it. This was done till 1868, when transportation to any part of Australia finally ceased.

The enormous extent of this colony, the paucity of fertile land, the remoteness from all the other colonies, and the absence of mineral wealth, have combined to keep it back, so that it remains the smallest in population and wealth, although the largest in area, of all the Australian colonies. It may be very simply described as comprising all Australia west of the 129th meridian; and it has a length of about 1250 miles from north to south, and a width of 800 from east to west. It has an estimated area of nearly 1,000,000 square miles, or almost exactly one-third of continental Australia. The settled portion is confined to the south-western angle, and is about 320 miles long by 160 wide, with an extension of settlements along the coast to the mining districts of Victoria and the Murchison River. There are also a few settlements on the Ashburton, Fortescue, and other rivers, as far north as the Oakover in latitude 21° south.

WESTERN AUSTRALIA.

Scale of English Statute Miles.

Note: This Map includes the south-western settled portion of the Colony only.

Stanford's Geog.l Estab.t

London: Edward Stanford, 55, Charing Cross.

2. *Physical Features.*

The settled parts of West Australia present no marked physical features, the mountains being comparatively low and undulating, so that they produce little scenic effect. The highest point is 3000 feet above the sea-level, but this is 60 miles from the coast, and is far above the average height, which is from 1500 to 2000 feet. The country near the coast is flat and sandy, while inland it never rises abruptly, so that there is no perceptible barrier between the coast and the interior. The Darling range, which runs north and south about 20 miles from the coast, is the most important. The whole country, except where cleared for cultivation, is covered with wood, varying from brush or scrub to lofty forest. Immense tracts are covered with the jarrah (*Eucalyptus marginata*), sometimes called mahogany, an almost indestructible timber, which is free from the attacks of teredo and termites, and is valuable for shipbuilding and for all engineering works.

The rivers, though numerous and of considerable size, are of little importance, owing to their being often without water for miles together. The chief, going northward, are—the Blackwood, Swan, Murchison, Gascoyne, Ashburton, Fortescue, and the De Grey or Oakover rivers. There are no lakes of any importance, except the numerous salt-lakes and lagoons of the interior deserts. These desert tracts occupy by far the larger part of the colony, stretching everywhere from the South Australian boundary to within distances of the coast varying from 50 to 300 miles. Even within these limits poor sandy soil, quite unfit for agriculture, occupies large areas, while the fertile lands are comparatively limited in extent, and are widely scattered over the country. In the north there are extensive tracts suited for sheep and cattle, but in many

districts there are poisonous plants which render sheep-farming impossible.

3. *Climate, Natural History, and Geology.*

The climate of West Australia is generally admitted to be one of the finest known. It is very dry, though with a rainfall of about 30 inches annually, and the heat is rarely oppressive. The sterility of the country generally, and the prevalence of sand, is highly favourable to health, as there is little luxuriant vegetation to produce miasma by its decomposition, and hardly any morasses or damp lowlands to breed ague and fever. The mortality of the whole colony is said to have averaged only one per cent since its formation, that of Great Britain being about two and a half per cent. The wet season is from April to September, but during this period there is much bright, clear weather. The rest of the year is dry, but with occasional showers and thunderstorms. During three months hot land winds occur, but they are neither so frequent nor so severe as in the southern and eastern colonies, while the great droughts and heavy floods so prevalent elsewhere are almost unknown in West Australia. Snow is unknown, and ice is only seen in the morning and in the depth of winter. With these excellent qualities the praise bestowed on it by a writer in the *Calcutta Englishman* may not be exaggerated—that it is a climate "such as no other in the world can excel, and few equal, for comfort and health-giving attributes."

As has been already stated in our chapter on the Natural History of Australia, this colony possesses many striking peculiarities in its flora and fauna. Sir Joseph Hooker, in his *Essay on the Flora of Australia* gives many interesting details on this subject, which we may here briefly summarise. In South-Western Australia there

are more species, but fewer genera and families than in the south-eastern districts; so that if we take into account the fact that the former district is of very much less extent, we see a wonderful crowding of species in a limited area, to which there is nothing else comparable in the world except at the Cape of Good Hope. The diminished number of genera and families is owing to the absence of many European and Asiatic genera which may be said to dilute the peculiar Australian flora in the south-east. This specialty is further shown by the fact that the proportion of species belonging to peculiar genera is twice as great in the south-west as it is in the south-east. Another important feature is the absence from West Australia of a number of genera common over all the rest of the continent, such as *Viola, Polygala, Epacris, Lycopus, Smilax* and several others. As a consequence of this crowding of the species of plants in Western Australia, many of them are very local, and a journey of 200 miles over nearly level country often carries the botanist into the midst of a flora entirely new to him as regards species. We have here, too, a singular illustration of the fact that it is in places where the country is comparatively bare and sterile that the most varied and beautiful assemblage of plants is often to be found. Some of the sandy plains, too poor to support a forest growth, are yet covered with shrubs and flowering plants in infinite variety and of exquisite beauty. Among these are many of the choicest adornments of our greenhouses, such as species of the genera *Chorozema, Boronia, Hovea, Kennedya, Dillwynia, Epacris,* and many others. The same thing occurs in the south-east, for the celebrated Botany Bay, whose floral treasures so delighted Banks and Solander when they visited it with Captain Cook, is a barren sandy tract, for the most part unfitted for cultivation, and still celebrated for the variety and beauty of the flowering shrubs and herbs with which it is covered.

In its animal life this colony is also very peculiar, though not exceptionally rich in species. It possesses several curious and anomalous forms, which seem to be remnants of an ancient world. Thus we have here alone the curious little banded ant-eater (*Myrmecobius fasciatus*), which presents the nearest approach in its dentition to the most ancient known mammals whose remains are found in the Oolite and Trias of the Mesozoic epoch. Here, too, is the curious *Atrichia* or "scrub-bird," whose peculiarities of structure are such as to isolate it from all other known birds. The *Geopsittacus* is a curious ground parrot; and almost all the mammals, birds, and reptiles are of peculiar species.

The geology of Western Australia is not so well known as that of the eastern colonies, but it does not appear to possess any remarkable peculiarities. There is a central north and south range of Palæozoic rocks, with intrusive masses of granite, often spreading into plateaus or rising in isolated hills. Beyond and around these stretches the barren Tertiary sandstone, forming those vast arid tracts which produce chiefly scrub and spinifex grass, and seem doomed to perpetual sterility for want of water. The coast consists largely of coralline sand, while inland there is an extensive formation, locally termed ironstone, but which, from the description, appears somewhat similar to the "laterite" of India and Malacca. There are some beds of Mesozoic limestone near the coast in the south-west, containing many fossil shells, which are identical with those of the Lias and Oolite in Europe. Volcanic deposits are not abundant. In the north trap rocks occur, with columns of basalt and greenstone; and there appears to be a volcanic district near Shark's Bay and the Dampier Archipelago. Some quartz reefs occur in the central ranges, but no gold deposits have yet been discovered of sufficient value to encourage extensive mining opera-

tions. Copper and lead have been found towards the north, and considerable quantities of ore have been obtained. Iron-ore, too, exists in large quantities, but no coal has been discovered to render it available.

4. *Colonisation, Population, etc.*

The progress of this colony has not been at all commensurate with that of the other parts of Australia where gold, coal, or a fertile soil has stimulated population and invited capital. In 1848, nineteen years after its first settlement, West Australia had only 4622 inhabitants. Between 1850 and 1859, however, more than 11,000 persons were added by immigration, nearly half being convicts; so that, although the population was but 5293 in 1850, it had swelled to 14,837 in 1859. In 1870 the numbers were 24,785, and in 1876 it was estimated at 27,321. This is only equal to that of Sandhurst, the third town of Victoria. Owing to the large proportion of convicts in the colony, there was, and still is, a great disproportion in the sexes. The number of males exceeds that of females by about 5000, the proportion being a little more than seven females to ten males.

5. *Productions, Trade, etc.*

Although, for causes already mentioned, West Australia cannot rival the other colonies in agriculture or sheep-farming, yet wool forms its most important product. The amount exported in 1876 was valued at £165,000. The specialty of the colony consists, however, in its production of sandal-wood and pearl-shells. The pearl-shells abound on its north-western shores, and produce about £70,000 annually. Sandal-wood grows in many parts of the colony, and is exported to a nearly equal amount. Resin and

tortoise-shell are also exported, and a trade in horses is springing up with Batavia, Singapore, and India. Another important article of trade is the jarrah wood already mentioned as being so valuable for engineering and marine works. It is estimated that 1000 square miles are covered with this timber, but this will not prevent its destruction, should the demand, as seems probable, increase, unless the Government take steps to prevent reckless destruction and encourage planting to replace what is cut down. The growth of the mulberry and the cultivation of the silkworm have been begun, and from the nature of the climate this industry ought to succeed. Corn, too, could be largely grown were it not subject to devastation by the rust; and the country is especially well adapted for the growth of fruit and vegetables of all kinds, but at present the absence of markets prevents much being done in this way.

The mineral produce of West Australia is as yet small. Gold has not been found in paying quantities, though the Government have for many years offered a reward of £5000 to whoever can discover a productive gold-field. Other metals, however, seem to be more plentiful. Over 2000 tons of lead were exported in 1876, with a small quantity of copper; and it is believed that large supplies of these metals exist. Mr. Anthony Trollope, however, is of opinion that the future prosperity of this colony will not depend on its minerals but on agriculture. Nowhere are more advantages offered by the Government to the immigrant; and for men able to work, who possess a very small capital, and have some knowledge of agriculture, there is probably no country in the world where a comfortable and even a luxurious existence may be attained as easily as in West Australia.

6. *Communications.*

The means of internal communication are at present but limited. There is a good road from Albany, on King George's Sound, to Perth, a distance of 261 miles, regularly traversed by mail-coaches; and there are similar roads to the other chief towns of the colony. There are no railways except a short line from Geraldton on Champion Bay to Northampton, the centre of the mining district—a distance of about forty miles—now in process of construction, and partly opened. There is also a short line in the south for conveying timber from the hill ranges to the coast on Geographe Bay. More important lines connecting all the chief towns of the colony have been surveyed, but their construction has not yet been decided on. The electric telegraph is, however, laid to all the chief towns, and, as already stated, along the southern desert coast to Echuca, on the South Australian boundary, a distance of 750 miles from Albany, thus bringing the colony into direct telegraphic connection with Europe. The total length of telegraph line is 1515 miles. Regular steamers run between all the chief ports of the colony, and the monthly mail furnishes the means of communication with the eastern parts of the Australian world; but arrangements have been made (and are probably now in operation) for more frequent steam communication with India, the Straits Settlements, and the Colonies of Australia.

7. *Political Divisions—Cities and Towns.*

West Australia is divided into twelve electoral districts, while the older settled portion in the south-west consists of twenty-six counties. These are—On the south coast, KENT, PLANTAGENET, STIRLING, LANARK, and SUSSEX; on the west coast, WELLINGTON, MURRAY,

PERTH, TWISS, and MELBOURNE; on the north, GLENELG, GREY, and CARNARVON; on the east, and bounded by the central desert, LANDSDOWN, BEAUFORT, MINTO, PEEL, and HAY; in the interior, GODERICH, NELSON, WICKLOW, GRANTHAM, YORK, HOWICK, DURHAM, and VICTORIA.

PERTH, the capital, is a city of 6000 inhabitants, pleasantly and picturesquely situated on the Swan River, twelve miles from its mouth. It is built on sloping ground above a fine lake-like reach of the river, and is well laid out, with handsome public buildings among which are two cathedrals. The principal street is nearly two miles long, and is planted with beautiful flowering trees—the Cape lilac. The City Hall, containing the Legislative Chambers, is a very handsome building, recently erected by convict labour. An excellent macadamised road connects the city with the port of Freemantle.

FREEMANTLE is the next town in importance, having a population of about 4000. It is situated at the mouth of the Swan River, twelve miles from Perth. The harbour is not good, being exposed to northerly gales, but there is a harbour of refuge at Garden Island, twelve miles distant. On Rottnest Island, twelve miles off the mouth of the river, is a penal settlement and farm for natives, and also the Government salt-works and a marine residence of the Governor.

ALBANY, or King George's Sound, is a small town of less than 1000 inhabitants, but important from its situation on a fine harbour, and as being the depôt and coaling-station of the Peninsular and Oriental mail-steamers. The district around is little cultivated, but abounds with rare and beautiful flowering shrubs.

BUNBURY in the south, and GERALDTON in the north, are the other chief ports of the colony. From the former the chief exports are timber, sandal-wood, and horses; from the latter, wool, copper, and lead. Very far north (1200 miles from Perth) is ROEBURNE, at the mouth of the Sherlock River, and the centre of the pearl-fishery. A large quantity of wool is also exported from this place direct to London. It is exposed to heavy gales, and in March 1872 every house was levelled to the ground. BUSSELTON, near the coast, in the south, is the place whence much jarrah timber is exported.

The only inland towns worth mention are GUILDFORD, on the Swan River, nine miles above Perth; GREENOUGH, 251 miles north of Perth, in the centre of an agricultural corn-growing country; and YORK, 60 miles east of Perth, in a district which supplies much sandal-wood as well as agricultural produce.

8. *Government, Education, etc.*

Western Australia differs from the rest of the Australian colonies in being still to some extent a Crown colony, the Executive Council as well as the Governor being appointed by the Home Government. Since 1870 partial representative government has been introduced by means of a Legislative Council, of which seven members are nominated by the Government, while fourteen are elected by the twelve electoral districts, the two most important—Perth and Freemantle—having two members each, the rest one. The elector's qualification is a house and premises of £10 annual value, while the member elected must have an income of £250, or landed property of £1000 value. At Nickol Bay there is a Resident or Commissioner, and the Champion Bay or Victoria district is agitating for a separate government.

The educational system is based on the principles of the English Education Act. Elementary schools are maintained wholly at the cost of the colony, while certain private schools have a capitation grant, given on condition of submitting to Government inspection for secular results, and to the observance of a strict conscience clause. School fees vary from 2d. to 1s. a week. In December 1876 there were 61 elementary schools and 22 assisted schools, the average attendance amounting to 7125. The Roman Catholics have many excellent schools throughout the colony, some of which are assisted by the Government.

Western Australia constitutes a diocese of the Church of England, and, according to the census, more than half the population belongs to the Church, which is subsidised by the Government. The Roman Catholics are also numerous, and participate in State aid. The various Dissenting churches appear to be less numerous than in the other colonies.

CHAPTER XI.

THE COLONY OF QUEENSLAND.

1. *Origin, Geographical Limits, and Area.*

QUEENSLAND is the youngest born of the Australian colonies, having been established in 1859, before which date it formed part of New South Wales, and was known as the Moreton Bay district.

It occupies the whole of North-Eastern Australia from the boundaries of New South Wales and South Australia to the Pacific Ocean and the Gulf of Carpentaria. It extends between 11° and 29° of south latitude, and between 138° and 154° of east longitude, having a maximum length of about 1300 miles, and a width of nearly 1000 miles; while it has an area of 670,000 square miles, and a seaboard of 2250 miles.

2. *Physical Features.*

The immense area of Queensland possesses some well-marked geographical features. Parallel with the coast, but at varying distances from it, are ranges of mountains averaging from 2000 to 3000 feet high, but with numerous peaks of greater altitude, especially towards the north. In the southern and more settled parts are several parallel and transverse ranges extending inland in a north-west direction, and forming the watershed of the Darling and the coast rivers. Farther north a range of highlands goes in a westerly direction, dividing the streams

QUEENSLAND. Eastern Part.

Scale of English Statute Miles.

London: Edward Stanford, 55, Charing Cross.

which flow into the Gulf of Carpentaria from those that turn inland. We have thus formed four great systems of rivers:—1stly, Those that flow eastward to the Pacific; 2dly, those that flow to the Darling, and form part of the great upper valley of the Murray; 3dly, those that flow into the Gulf of Carpentaria; and 4thly, those that flow westward and lose themselves in the inland desert or in salt lakes, the most important of these being the Victoria or Barcoo, which in its lower course is called Cooper's Creek, and empties itself into Lake Eyre in South Australia. Of these four divisions the eastern or Pacific coast district is the most varied, the most fertile, and in every way the most important. It has the best climate, the richest soil, the highest mountains, and the most beautiful scenery, and it comprises the larger portion of the settled country. Its abundant rains and high temperature make it suited to the growth of almost all tropical and sub-tropical products, while sheep and cattle also thrive in it. It is almost wholly covered with wood, either scrub or forest, and has much fine woodland scenery and a very luxuriant vegetation. The coast is thickly strewn with islands, which often form fine harbours; and within the tropics the great Barrier coral-reef extends itself at some miles from the coast, producing a calm sea in which are numerous islands of various sizes, and offering scenes of great beauty.

The second division, or Upper Darling valley, is a more open, pastoral country, admirably suited for the production of wool, though subject, like all the inland parts of Australia, to severe droughts. The third division, or basin of the Gulf of Carpentaria, is a tropical country of plains and rivers, and is partly occupied for grazing purposes.

The fourth division, or that of the inland streams, is very little known, but is mostly an arid country, parts of which may be suited for pastoral purposes, but in which

the scanty and uncertain water supply must always be a drawback.

The highest mountains are the Bellender Ker peaks, not far from the coast, to the north of Rockingham Bay, while Mount Dalrymple, about 100 miles farther south, is over 4000 feet. The ranges in the southern part of the colony are not very lofty, but they contain the "Glasshouses" and other singular volcanic peaks.

The principal rivers are the Burnett, the Fitzroy, and the Burdekin, emptying themselves into the Pacific; the Flinders, the Albert, the Mitchell, the Gilbert, and Norman, emptying themselves into the Gulf of Carpentaria; the Victoria or Barcoo, flowing through Cooper's Creek to Lake Eyre; the Dumaresque, Condamine, and Warrego, flowing towards the Darling.

The coast of Queensland has many good harbours. Besides the fine and extensive harbour of Moreton Bay, it has Hervey Bay, Keppel Bay, Port Curtis, Port Bowen, Port Denison, Rockingham Bay, and Port Albany, near Cape York.

3. *Climate, Natural History, and Geology.*

As Queensland extends only five degrees beyond the tropic, it of course possesses a more uniformly hot climate than the more southern settlements wholly in the temperate zone. It may, however, be doubted whether the heat is so oppressive as farther south, since Queensland is almost wholly free from the exceptional hot winds from which the other colonies suffer; while their sudden and extreme changes of temperature are equally unknown here. During a large part of the year the weather is fine, the sky cloudless, the atmosphere dry and exhilarating. The three summer months—December, January, and February—are hot; and, as much rain falls at this time, tropical moisture

and heat are combined. In all the coast districts the rainfall is great, being about 50 inches at Brisbane and Rockhampton, while at Rockingham Bay it is 90 inches. Inland it decreases rapidly. At Gympie, about 30 miles from the coast, it is 44 inches; at Nebo (70 miles), 21 inches; while at Springsure, 160 miles inland, it is only 17 inches. At greater distances inland it is much less, and altogether uncertain; the Alice Downs, on the Thompson and Barcoo rivers, having about 10 inches, with excessive evaporation. The north coast has the regular tropical monsoons, giving about seven months dry and five months wet weather. The mean temperature at Brisbane is 69° Fahr., and the changes of the thermometer are far less extreme than at Sydney or Melbourne, while cool southerly breezes prevail throughout the year, so that the heat is rarely felt to be oppressive. Over by far the larger part of the colony frost and ice are unknown, while at Brisbane the winter is a most delightful season, with cool mornings and evenings, bright and warm days, the sky always blue, and the air wonderfully transparent. This colony is almost entirely free from epidemic diseases, and is very favourable to the European constitution, especially to those with a tendency to consumption. Although most of the mining districts are well within the tropics, the dryness and purity of the air are such, that Europeans pursue the laborious occupation of gold-mining as easily as in other parts of Australia.

The natural products of Queensland differ chiefly from those of New South Wales by the presence of a number of tropical forms, which everywhere intermingle with the usual Australian types. Thus, in the vegetation of Australia, we first meet with the screw-pines (*Pandanus*) at Moreton Island, in latitude 27° south, and Araucarias at Port Bowen, just within the tropic. The sea-coasts are chiefly tenanted by an Indian vegetation, including man-

groves and pandani. Farther inland we have many Indian genera of leafy trees, very different from the usual Australian type. This is hence called the "brushwood" or "cedar" country, and it also contains numerous Malayan forms, especially palms of the genera *Cycas*, *Areca*, *Caryota*, and *Calamus*. Bamboos and epiphytic orchids are, however, rare; and everywhere *Eucalypti*, *Acaciæ*, and other specially Australian forms, make up the bulk of the vegetation. Farther inland, over the elevated sandstone plains, is found a peculiar vegetation of small trees and shrubs, mostly of the families Capparideæ, Pittosporeæ, and Sterculiaceæ, with Bauhinias, and the curious bottle-trees with swollen trunks—species of *Delabechia* and *Brachychiton*.

It is very singular that in tropical Australia the number of genera and species of plants is much less than in the temperate parts of the continent. Only about 2200 tropical species are known, and Sir Joseph Hooker thinks that the total number will not exceed 3000. The known species are therefore hardly more than a third of the numbers found in temperate Australia. It is to be noted, too, that about 500 species are quite identical with those of India and Malaya. Another peculiar feature of the tropical Australian flora is, that several important families, abundant in the *tropics* of other parts of the world, and also found in *temperate* Australia, are either scarce or altogether absent. Such are the Dilleniaceæ, Buettneriaceæ, Polygaleæ, Rhamneæ, Myrtaceæ, Santalaceæ, Orchideæ, Liliaceæ, and Restiaceæ.

In the animal world there is no such striking difference. There are no peculiarly tropical forms of mammals in Australia, except a *Cuscus* allied to those found in the Moluccas and New Guinea, and a sea-cow (*Halicore*) allied to that of India. In birds, however, several forms allied to the Paradise birds of New Guinea (*Manucodia*, *Ptilorhis*,

Chlamydodera) occur near the northern coasts. In insects, too, there is a great change in the numbers, size, and colour of the butterflies. The golden-green bird-winged butterfly (*Ornithoptera*) is found all through Queensland, and even as far south as Richmond River in New South Wales; but its small size, in comparison with its Papuan relatives, betrays the inferiority in climate and vegetation; and on the whole, the butterflies of Northern Australia are far inferior in variety and beauty to those of the Moluccas and New Guinea. In Coleoptera or beetles Australia is very rich, and differs greatly from the Austro-Malayan fauna; and this difference appears to pervade the tropical as well as the temperate regions. The Australian weevils (Curculiondæ) abound in large and peculiar forms, while the allied Anthribidæ, which abound in Austro-Malaya, are almost unknown even in the most tropical parts of Australia.

The geology of Queensland has been tolerably explored by travellers and colonial geologists. The eastern and northern portions consist of ancient formations, producing coal, gold, granite, slate, and basalt; while the western interior is largely covered with the Tertiary desert sandstone, alike unproductive of minerals and deficient in water and vegetation. The ranges next the coast are granitic, those farther inland of Palæozoic rocks, and it is in the intervening country that the coal formations are developed. Granite extends with little interruption from Cape York in the extreme north to Broad Sound in lat. 22° S., with patches farther south. It rises to 2500 feet high on Hinchinbrook Island in lat. 18½° S. At the Ravenswood gold-field (200 miles west of Repulse Bay, in the upper valley of the Burdekin River) the formation is described as syenitic granite. Mr. Daintree estimates that one-sixth of the area of the colony is granitic. Metamorphic rocks occur near Brisbane, and at the gold-

mines to the north. Palæozoic rocks are very extensive. The carboniferous cover 14,000 square miles and the Devonian 40,000, the latter extending 200 miles inland between lat. 18° and 29°. They are found at the Gympie gold-fields on the Mary River, and are of immense thickness from the Burdekin to the Gilbert rivers. The Mesozoic formations are better developed in Queensland than in any other part of Australia. In the southern part of the colony there is an Oolitic coal-field, with fresh-water and estuarine deposits. Rocks of similar age occur on the Barcoo and Thomson rivers far in the interior; while in the west and north-west are vast cretaceous beds, believed to extend over an area of 200,000 square miles, or one-third of the entire colony. Both deposits contain numerous marine shells of the same genera as occur in the Oolitic and chalk formation of Britain. We have here a probable explanation of the curious fact of the poverty and want of specialty in the tropical fauna and flora of Australia; for if so much of the tropics was beneath the sea during the cretaceous period, there may have been no room for special tropical forms to be developed; and when the area in question became dry land it was at once overrun by such of the specialised temperate forms as were suited to it, and by a number of waifs and strays from the tropical lands to the north, thus producing that intermixture of types and want of special character which are now its most prominent features. The coal formations of Queensland are very extensive and of great prospective value, some of the coal having been proved to be of good quality. It consists of Palæozoic or true coal, found in the central parts of the colony about the Mackenzie and Dawson rivers; while farther south, near Brisbane, and on the Upper Darling, there are almost equally extensive and valuable deposits of Mesozoic age.

Volcanic rocks abound, covering more than 30,000

square miles, and forming open basaltic downs, dome-shaped hills, peaks, or tabular ranges, with precipitous ravines and prismatic columns. True volcanic cones also abound in the Dividing Range, extending as far north as the York Peninsula. Well-defined craters and ancient lava-streams are often found, especially about lat. 20° near the Burdekin River. Signs of very recent volcanic action are to be seen in the Murray Isles off Cape York.

Tertiary formations cover about one-fourth of the colony, consisting of conglomerates and desert sandstone. The latter often renders a country uninhabitable, the loose surface being blown or washed into parallel ridges, sometimes forming hilly undulations, at others furrow-like ripples, and almost wholly barren. This sandstone is usually conformable to the cretaceous rocks beneath. When ferruginous it forms the singular flat-topped hills of Central Australia, and near the Cloncurry River in the north reaches 3000 feet above the sea. These sandstone hills are often very picturesque, and have been compared by the explorers to ruined castles or the wild pictures of Salvator Rosa. Gorges and precipitous escarpments abound, with vertical walls 600 or 1000 feet deep, and occasionally even 1800 feet, according to Leichardt's estimate.[1]

The Great Barrier Reef of Australia belongs entirely to Queensland, and is one of the most remarkable geological and geographical phenomena in the world. It is 1200 miles in length, and extends along the whole eastern coast from opposite Port Bowen in lat. 23° to Torres Straits. Near its southern end it is seventy miles wide, and nearly 100 miles from the coast; but it is generally of much less width, and the channel between it and the shore from five to fifteen miles wide. The

[1] For a reference to the error on Leichardt's map as to cliffs "3800 feet high" on the Alligator River, see Chapter II., p. 18, footnote.

navigation is dangerous for ships owing to the numerous sunken reefs. Here and there are openings to the ocean, some very narrow, some ten or twelve miles wide; and it contains examples of all the various kinds of reefs—atolls, fringing reefs, and other coral formations. The portion of the reef above water, with its numerous islands, is estimated to cover an area of 30,000 square miles. Its outer margin probably indicates the position of the ancient coast-line of Australia. This was fringed with coral reefs, but as the land sank the coral animals continued to build upwards to the level of the sea, and thus a great ridge was formed, which, broken and heaped up by the waves of the Pacific, forms the present huge barrier. Fresh water is very inimical to coral, and openings are thus formed in all fringing reefs at the mouths of rivers. These openings remain in the Barrier Reef, the largest being opposite the mouth of the Burdekin River, which drains a considerable portion of tropical Eastern Australia.

4. *Population.*

Owing to its fine climate, and the mixture of mining adventure with the culture of tropical products, Queensland has attracted to itself a more varied population than most of the other colonies; and this may be said to consist of four distinct races,—the *White*, the *Yellow*, the *Brown*, and the *Black*. The *White*, or Europeans and Americans, are by far the most numerous, forming about nine-tenths of the whole; then come the *Yellow*, or Chinese and Japanese, about two-thirds of the remainder; the *Brown*, or Polynesian labourers (most of whom are, however, Melanesians, and nearly black), forming the other third. This is exclusive of the *Black*, or aboriginal Australians, whose numbers are unknown, but which are probably more numerous than the Chinese and Polynesians

combined. The rate of increase has been very rapid. Soon after the formation of the colony, in 1860, the population was 28,056; in 1870 it had increased to 115,567; and in 1876 it had reached 173,283. Of these about 16,000 were of various non-European races. Of the 157,000 Europeans about 71,000 were native-born Australians, 70,500 British, 900 Americans, 10,000 Germans, and 4000 of other European nationalities.

Unfortunately the difference in the numbers of the two sexes still continues very great. The Chinese may be said to be all males; the Polynesians nearly all; and even among the population of European race there is a surplus of 21,000 males; the numbers being 89,000 males to 68,000 females. The population is now, no doubt, considerably larger, as in 1875 the increase, both from growth and emigration, was rapid. In that year there were 6706 births to 4104 deaths, while the increase due to emigration was 12,136.

5. *Productions and Trade.*

The leading products of Queensland, in quantity and value, are gold and wool; but in both these it is surpassed by New South Wales and Victoria. In such tropical products as sugar, cotton, and maize, however, it takes the lead; and these may be considered its specialties. The fine climate and soil, and abundant moisture of Queensland, make it adapted for a variety of crops. Even wheat is grown largely, 4478 acres being under this crop in 1875, and the produce was larger than in most parts of Australia, averaging 20 to 22 bushels an acre; while, in some instances, 40 bushels have been obtained. The crop of maize covered 38,711 acres; cotton, 1674 acres, and sugar-cane, 13,459 acres. Arrowroot and tobacco are also grown in small quantities. The produce for the

year was 65,645 bushels of wheat, 1,122,829 bushels of maize, 9120 tons of potatoes, 6322 tons of sugar, and 77,400 gallons of wine. The number of sheep was over 7,000,000, and of cattle nearly 2,000,000. In 1876 the quantity of land cropped had considerably increased, bananas and pine-apples being added to the list of cultivated products. Preserved meats and Liebig's extract are also largely manufactured. The colony is very rich in forest trees adapted for house and ship-building, or for ornamental cabinet work. It has numerous hard-wooded pines; also cedars, yellow-wood, satin-wood, native orange, sandal-wood, ebony, iron-wood, and many other kinds which are close-grained and beautiful, as well as the Casuarinas and Eucalypti of the other colonies. In 1875 timber was exported to the value of £26,884, and the supply is practically inexhaustible.

The mineral resources of Queensland are large, and are being rapidly developed. Gold was first discovered in 1857, in the Canoona district; but it was not till ten years later, in 1867, that the rich Gympie mines, on the May River, were worked; and since then many others have been found, especially in the north. The Canoona district, near Rockhampton, is rich; and in the north are the Ravenswood, the Gilbert, the Palmer River, and the Cloncurry mines. From 1860 to 1875 the gold exported from the colony was valued at nearly £7,000,000. In 1875 the known quartz reefs were 652 in number, and over 2800 square miles of auriferous ground was being worked. The average yield to the ton of quartz was 1 oz. 14 dwts. 12 grs., and the gold sent down by escort was 171,866 oz. Copper is also extensively worked, 28 mines having produced about £160,000 worth of ore. Tin was produced to the value of £114,000; also a little antimony and cinnabar. Coal is very abundant, but is not yet very largely worked. The coal beds are

estimated to extend over a surface of 24,000 square miles. During 1875 nine mines were at work, and produced 32,107 tons, valued at £14,835. The population in the gold-fields is very large, being estimated in 1876 at 12,090 Europeans and 6560 Chinese. The pearl-fishery is now engaging considerable attention on the northern coasts, both native and European divers, — the latter with diving apparatus and dresses—being employed.

In 1876 the exports of the colony amounted to £3,740,259. Among the manufactories are numerous sugar-mills, steam saw-mills, soap-works, tanneries, agricultural instrument manufactories, brick-works, and coopers-ages. The shipping returns show for the year ending June 30, 1876, — inward, 435,811 tons; outward, 389,418 tons. There are registered in the colony 39 ocean steamers and 102 river-going steamers, with an aggregate of 21,544 tons.

6. *Roads, Railways, and Telegraphs.*

There are nearly 10,000 miles of public roads in Queensland, which are kept up at an expense of £173,600 a year, so that this colony seems better provided than some of the others. Its extent, however, is so vast, that much of the interior must be entirely unprovided with roads.

There are at present only two railways. The Southern and Western Railway extends from Brisbane through Ipswich to Dalby, on the Darling Downs, a distance of 152 miles; and a southward branch to Warwick, near the borders of New South Wales and 165 miles from Brisbane. The Northern Railway runs from Rockhampton to Blackwater, a distance of 118 miles, and is being farther extended towards the Clermont mining district, 170 miles farther. Another line is to be made from Maryborough towards

Gympie. The Southern line is being extended from Warwick to Stanthorpe (40 miles), and from Dalby to Roma (180 miles). Coaches run from the railway station to the principal towns, and communication along the whole coast is kept up by the steamers of the Australian Steam Navigation Company.

The electric telegraph is laid to every town in the settled districts, and there is also communication with all the Australian colonies and with Europe. An overland line also connects Brisbane with Normanton, at the head of the Gulf of Carpentaria, 1425 miles distant, and it is hoped that an additional submarine cable may be laid to this point, so as to offer an alternative line between Australia and Europe. The cost of construction of these telegraphs amounted, up to 1875, to £300,617; and the working over such an extensive area shows an annual loss.

7. *Political Divisions.*

Queensland is divided into twelve large districts, mostly characterised by distinct natural features. The older settlements are also divided into counties; but, for most purposes, the districts are alone referred to. They are as follows:—

The MORETON District is bounded on the south by New South Wales, on the west by the Dividing Range, and on the north by the Wide Bay District. It has an area of 7700 square miles, and comprises the counties of Ward, Churchill, Stanley, Cavendish, and Canning. It contains the city of Brisbane and the town of Ipswich. Its population in 1876 was 66,094; or considerably more than one-third the population of the whole colony.

The DARLING DOWNS District includes an extensive tract of upland country to the west of the Moreton District. It is the richest pastoral region of the colony, and also

comprises much of the finest agricultural land. Wheat, maize, barley, oats, arrowroot, potatoes, and all kinds of vegetables, are cultivated. It comprises the counties of Merivale, Aubigny, Bentinck, Marsh, Derry, Lytton, Bulwer, Rogers, Elgin, Pring, and Carnarvon. The towns are Condamine, Dalby, Bowenville, Kogan, Leyburn, Goondiwindi, Warwick, Drayton, and Toowoomba. The population in 1876 was 6472.

The BURNETT and WIDE BAY District lies north of the Moreton district and south of Port Curtis. It is chiefly pastoral, but much tropical produce is grown, especially sugar, on the river flats. At Gympie are valuable gold-mines, and coal has been worked on a branch of the Mary River. It comprises the counties of March, Lennox, Fitzroy, Mackenzie, Newcastle, Wicklow, Bowen, and Cook. Maryborough, on the river Mary, is the port. Gympie, Gayndah, and Nanango, are other towns. The western and south-western parts are mountainous, and the area is about 7050 square miles.

The PORT CURTIS District lies northward of the last, from which it is separated by the Dawes Range; and it stretches westward into the interior, with an area of 14,000 square miles. It comprises the counties of Flinders, Clinton, Pelham, Raglan, Deas, Thompson, Packington, Livingston, Liebig, and Palmerston. The chief towns are, —Rockhampton on the Fitzroy River, Gladstone, Yaamba, Marlborough, and Gainsford. In the north-west are mountains 3000 feet high. There are important gold-mines on the Calliope, Boyne, and Fitzroy rivers, and also some copper mines; and marble quarries are worked near Gladstone.

The LEICHARDT District is a large tract of pastoral country, with abundance of grass and water, lying to the westward of Port Curtis. It contains some gold and copper mines. The chief towns are Banana, Plainby, and Taroom.

The MARANOA District is purely pastoral, to the west of the Darling Downs and south of the Leichardt. It is chiefly table-land and open downs. The towns are Roma, Surat, and St. George.

The KENNEDY District is situated to the north of Port Curtis. It extends 350 miles along the coast, from Cape Palmerston to Rockingham Bay, and inland to Mount Remarkable, 170 miles from the mouth of the Burdekin River. It is well watered, and has extensive pastoral tracts, as well as much land suited to the growth of sugar, maize, and cotton. Its chief town is the port of Bowen, in Edgecombe Bay. Its other towns are Cardwell, Townsville, and Mackay.

The MITCHELL District lies in the interior, to the west of the Leichardt. It is entirely pastoral, and very little settled, the population in 1876 being 2190. Tambo, on the head waters of the Victoria or Barcoo River, is the chief town.

The WARREGO District is in the southern interior, west of the Waranoa. It is entirely pastoral, and little settled. Charleville, on the Warrego River, is the chief settlement.

The GREGORY District is in the far interior, to the west of Warrego and Mitchell. It is purely pastoral, but almost unknown. Cooper's Creek runs through the southern part of it, and Burke and Will's Creeks more towards the centre. This country has a melancholy interest from its being the scene of the death of the explorers Burke and Wills.

The BURKE District is an enormous tract, occupying the whole north-western part of the colony to the Gulf of Carpentaria. It is watered by numerous rivers, among which are the Norman, Gilbert, Staaten, Flinders, Albert, and Nicholson, all emptying themselves into the Gulf. Some portions are in the hands of squatters for grazing purposes, but very little is occupied, the whole population

in 1876 being 318, while the area is more than 120,000 square miles. It contains the Cloncurry gold-field and copper mines, and the settlements of Normanton, on the Norman River, the present terminus of the overland telegraph; Burke Town on the Albert River, and Chandos on the Leichardt River.

The COOK district occupies Cape York Peninsula and the extreme northern portion of the colony. It is watered by the Mitchell, Kennedy, and many smaller rivers. The chief settlements are Cooktown, at the mouth of the Endeavour River; Cairns, a seaport on Trinity Bay, with a fine harbour, and connected by a good road with the Hodgkinson gold-field; White Island Point, another good port about 40 miles north of Cairns; and Somerset, the most northern town in Australia, situated at Cape York, and the headquarters of the missions to New Guinea and the islands of Torres Straits. Thursday Island, a small island off the west coast of Cape York, has, however, recently been settled by the Government as a more healthy and advantageous site than Somerset, being in the track of all vessels sailing through the Inner Channel, serving as a harbour of refuge, and much frequented by the pearl-fishers. About 120 boats are engaged in the pearl-fishery on the surrounding coasts and islands. The climate is very healthy, a cool south-east wind blowing the greater part of the year, and the temperature rarely exceeding 90°—quite moderate for Australia. The Cook District is, however, chiefly celebrated for its gold-mines, the most important of which are known as the Palmer River and the Hodgkinson gold-fields. The former are situated near the centre of the district, on the upper waters of the river Palmer, a tributary of the Mitchell. They comprise the Palmer, Normanby, and Cook diggings, covering a distance of 70 miles. Cooktown is the nearest port, 45 miles from Normanby. Besides gold, there is tin in the neighbourhood,

and coal near the coast. There is also much good land, so that all the elements exist for the support of a thriving population. There are a large number of Chinese and Europeans at these mines; but the natives are troublesome, having speared many of the miners. They are said to be a fine race, far superior to those of the south. The Hodgkinson gold-field lies about 60 miles farther south, and about the same distance from the coast. It was only opened in March 1876, yet roads have been made, towns built, over a thousand square miles of country prospected, and large quantities of gold procured. The reefs are very numerous and rich. There are nine quartz-crushing machines at work, and many more are expected. Eight townships have been formed, containing about fifty-five licensed hotels, and all kinds of shops, including jewellers, news-agents, circulating libraries; together with doctors, lawyers, barristers, and all the various components of a settled community, brought together in the centre of a tropical wilderness, in less than one year, by the magic power of gold. The total population of the district is variously estimated at from 9000 to 17,000; but the higher number is probably now not excessive. There are a very large number of Chinese at the Palmer River.

8. *Cities and Towns.*

BRISBANE, the capital of Queensland, and an episcopal city, is situated on the river Brisbane, about 25 miles from its mouth in Moreton Bay. It is 500 miles north of Sydney, in south latitude 27° 28′, and east longitude 153° 6′. It was originally settled in 1825 as a penal station. In 1842 the colony was open to free settlers, and from that time the city made rapid progress. The population, in June 1877, was estimated to be 28,000. The Roman Catholic cathedral is a fine building, and the Houses of the Legislature, still incomplete, have cost £100,000. The Viceregal Lodge is very handsome. There is a noble iron bridge over the river, more than 1000 feet long, with two swing openings of 60½ feet

wide each, to allow the passage of ships. The botanical gardens of Brisbane are laid out with great taste, and are excellently kept, and the almost tropical climate permits of a variety of interesting plants being grown in the open air, which elsewhere have to be separated in different hothouses. Here may be seen the sugar-cane, the tea and coffee shrubs, the Paraguay tea (*Ilex paraguayensis*), the Tolu-balsam tree (*Myroxylon toluifera*), the Malayan india-rubber tree (*Urceola elastica*), and many other interesting plants of the tropical and sub-tropical zones. The Queen's Park, Victoria Park, and Bowen Park, also supply means of recreation to the inhabitants of Brisbane. The city is supplied with water from the hills near the head of the Enoggera Creek, almost seven miles off, and the works have cost nearly £100,000.

Although Queensland has but a small capital city as compared with New South Wales or Victoria, it possesses a rather large number of considerable towns with between five and ten thousand inhabitants.

IPSWICH (population 7700), though not the most populous of these, is considered to be the second town in the colony. It is situated at the head of the navigation of the Bremer River, 25 miles west of Brisbane, and is the capital town of the district of West Moreton. It is pleasantly situated on the slopes of three hills, and is very healthy. The surrounding district is agricultural, but some rich seams of coal, which crop out on the surface, have been worked on the banks of the Bremer and Brisbane rivers. There is a woollen manufactory in the town. It is connected with Brisbane by railway.

MARYBOROUGH (population 8608) is situated on the river Mary, 25 miles from its mouth, and 180 miles north of Brisbane. It is the port of shipment for most of the produce of the Wide Bay and Burnett Districts, of which it is the chief town. There is here a wooden bridge over the river one-third of a mile long. Sugar is cultivated on the rich land on the banks of the river, and there are nine large sugar-factories. Timber is also largely exported, and there are large iron-foundries and soap-manufactories. The produce of the Gympie gold-field all comes to Maryborough for export.

ROCKHAMPTON (population 8052) is an important town on the Fitzroy River, 45 miles from its mouth, and 420 miles north-west of Brisbane. It originated during the gold rush to Port Curtis, and is now the port of shipment for a wide extent of country, and for some of the produce of the Peak Davis copper and gold mines. It is the starting-point of the Great Northern Railway, which at present extends to Blackwater, a distance of 118 miles. There is much mineral wealth in the neighbourhood,—gold, copper, and silver

mines being worked at various places within 40 miles of the town. Four miles off are large meat-preserving works, employing 100 hands. There is much good grazing-land in the vicinity, which is being rapidly stocked.

COOKTOWN, situated on the northern bank of the Endeavour River, 1050 miles north-west of Brisbane, was established in 1873, and is already becoming one of the most important ports in the colony. It has a resident population of about 3000 whites and 5000 Chinese. It has a custom-house and many fine warehouses and wharves. It is the port for the Palmer River gold-fields, and is visited by three lines of ocean steamers, giving it constant communication with the other colonies and with Europe.

GYMPIE is a large straggling gold-fields town, prettily situated on hilly ground, on the upper waters of the May River, 116 miles north of Brisbane and 54 south of Maryborough. Gold was first discovered here in 1867, and the town has now about 6000 inhabitants. The Gympie mines have already produced gold of the value of about a million and a half, and are still very productive. The country round is known to contain copper, silver, antimony, cinnabar, bismuth, and nickel; but these have not yet been worked. There is also much good pastoral and agricultural land.

Of towns with between one thousand and five thousand inhabitants there are but few.

CHARTERS' TOWERS is a mining town of about 1000 inhabitants, 820 miles north-west of Brisbane and 90 miles inland from Townsville in Cleveland Bay. The monthly yield of gold here is about 8000 ounces.

COPPERFIELD is a town of 1430 inhabitants, 600 miles north-west of Brisbane and about 120 miles west of Rockhampton. Copper and gold mining is carried on in the neighbourhood, and agriculture is on the increase.

DALBY, on the Darling Downs, 1120 feet above the sea-level, and the present terminus of the Western Railway, is the centre of a large tract of rich agricultural and grazing country. Its population is 1870. The railway is probably now open to Condamine.

KINGSTON is the chief town of the alluvial mining district of Palmer River, and was formerly called Oakey Creek. It has a population of 1200 Europeans and about 5000 Chinese.

MACKAY is a town and seaport of 1500 inhabitants, situated on the south bank of the Pioneer River, north of Broad Sound, and 625 miles north-west of Brisbane. It is in a pastoral and agricultural district; sugar, tobacco, coffee, and other tropical productions thriving here. Sugar and rum are largely manufactured.

MILLCHESTER is a mining town of 1250 inhabitants, only 2½

miles from *Charters' Towers*, whose position has been already indicated.

RAVENSWOOD is a mining town of 1100 inhabitants (many of them Chinese), near the sources of the Burdekin River, and 50 miles from Millchester and Charters' Towers. There are many gold-reefs here, and numerous mines in the surrounding country, for which this town forms a centre.

ROMA is a town of 1150 inhabitants, the proposed terminus of the Western Railway, and 330 miles north-west of Brisbane. It is in a fine pastoral district, well stocked with sheep and cattle. The vine is also largely cultivated, and 2000 gallons of wine were made in 1877.

STANTHORPE is a town of 1080 inhabitants, situated in the county of Bentinck, 184 miles south of Brisbane and only a few miles from the New South Wales boundary. Its prosperity depends on the tin mines of the surrounding district. It is elevated and healthy, and there is much good grazing and agricultural land in the neighbourhood.

TOOWOOMBA is the principal town of the Darling Downs, situated on the summit of the range, 1940 feet above the sea-level, 102 miles west of Brisbane. The population is nearly 5000. Wool, wheat, maize, and potatoes, are the chief products of the district, which is exceedingly rich agriculturally.

9. *Government, Religion, Education, etc.*

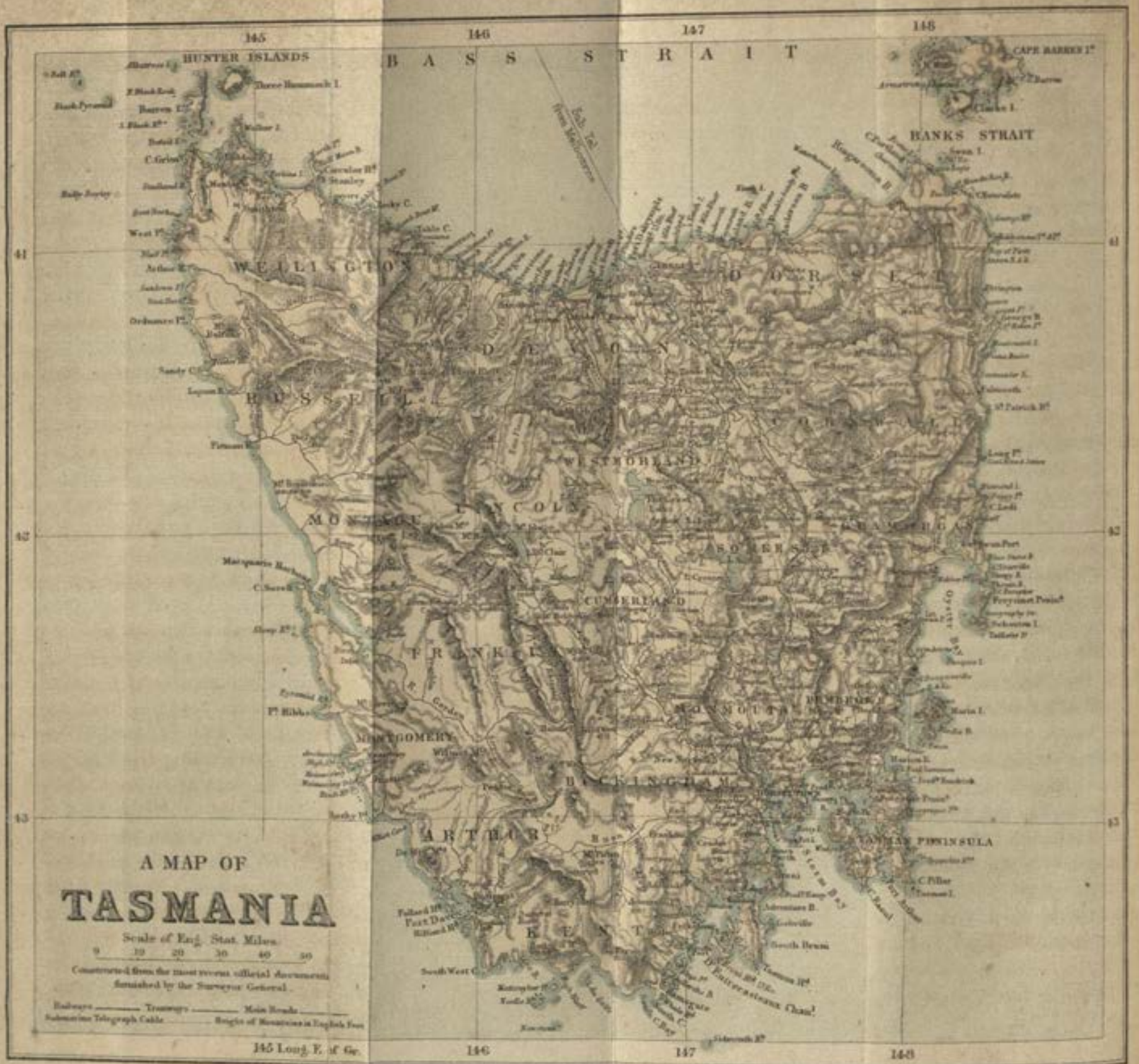
The government of Queensland is carried on by a Governor and two Houses of Parliament, called respectively the Legislative Council and the Legislative Assembly. The twenty-eight members of the former are nominated by the Crown for life, while the Assembly consists of forty-three deputies chosen by £10 householders for five years. Even Chinese, Polynesians, and Aborigines, have the vote if they have the requisite qualification and are naturalised British subjects. The members of Parliament are not paid.

Religion is now free in Queensland, State aid to any denomination having been abolished in 1860; but ministers are registered to enable them legally to celebrate marriages. According to the statistics of the

census of 1876, the proportions of the various churches were—62,000 Church of England, 50,000 Dissenters, and 43,000 Roman Catholics. This, however, probably gives an undue preponderance to the Church of England, as we have seen to be the case when, in the other colonies, we had the statistics of church accommodation. Here we have the numbers of the ministers of the various denominations as follows:—Church of England 31; Dissenters 89; Roman Catholics 26, which renders it probable that the actual attendants at the various Dissenting chapels far outnumber those who frequent the Episcopal churches.

Education in this colony is free and secular, religious instruction only being given by ministers or others out of school hours. Primary schools are either wholly supported by the Government, or are assisted by it. The formation and maintenance of higher schools in any locality is also aided by the State. The whole system of education is controlled by a Department of Public Instruction under a Minister for Education. In 1876 there were in all 400 schools, with an average attendance of 18,500 children, at a cost of £2 : 7 : 10 each. Accordto the census return, about two-thirds of the entire population can read and write. There are also 18 Schools of Art and one Miners' Institute in Queensland, 21 public hospitals, and four orphan asylums. These are supported by private contributions, and are assisted by the State.

Criminals are made to grow sugar and tobacco on St. Helena Island in Moreton Bay, the result being that the cost of their maintenance is reduced to £3 or £4 a head for the year.


145
146
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148
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42
43
HUNTER ISLANDS
B A S S S T R A I T
CAPE BARREN I.
BANKS STRAIT
Three Hummock I.
Walker I.
Table C.
Table I.
Cascades
Mt Stanley
Sandy C.
Table C.
Arthur R.
Ordnance Pt.
Sandy C.
Pieman R.
Marquarie Harbour
C. Sorell
Sloop R.
Pyramid Hill
Mt Ribbon
Gordon
Mt Gordon
Mt Humboldt
Mt Darwin
Mt Sedgwick
Mt Lyell
Mt Owen
Mt Huxley
Mt Wellington
Mt Direction
Mt Arthur
Mt Victoria
Mt Barrow
Mt Cameron
Mt Maria
Mt Paul
Mt Pelion
Mt Oakleigh
Mt Ossa
Mt Pedder
Mt Rufus
Mt Gell
Mt Humphrey
Mt Lloyd
Mt Hamilton
Mt Dromedary
Mt Nicholas
Mt Wedge
Mt Barrow

CHAPTER XII.

THE COLONY OF TASMANIA.

1. *Origin, Position, Area.*

THE insular colony of Tasmania is in many respects the most interesting, as it is certainly the most beautiful portion of Australia. Originating as a convict settlement, in 1804, its settlers had many arduous struggles with bushrangers and natives, till the remnant of the latter were induced to surrender in 1832, and the convict system was finally abolished in 1853. It continued to be a dependency of the Crown till 1825, when, on the petition of the inhabitants, it was granted a constitutional Government.

Situated to the south of the most southern portion of Australia, from which it is separated by a strait 150 miles wide, Tasmania is far more temperate and equable in climate than any part of the mainland. It lies between 40° 40′ and 43° 38′ south latitude, and is about 200 miles long, and a little less in width, having the form of a semi-ellipse or heart; the base, which is somewhat hollowed out, to the north, and the vertex to the south, where the coast is more irregular. Its western extremity is nearly due south of Geelong, in Victoria, from which it is distant about 180 miles. Its area is about 24,500 square miles, and its numerous dependent islands amount to an additional 1800 square miles. Although the outline of Tasmania is generally even and well-defined, it is broken up in detail, so as to afford many bays and inlets,

and a number of good harbours. On the north are Port Frederick, Port Sorell, and Port Dalrymple; on the east, Great Swan Port; on the south, Port Arthur, Norfolk Bay, Cloudy Bay, Port Davey, and many others; and on the west (which is for the most part a rocky iron-bound coast), there is only one important inlet, Macquarie Harbour. There are in all 55 Tasmanian islands,—the most important being Flinders Island and Barren Island, at the eastern entrance to Bass's Straits; King Island, on the west; Robbins, Hunter, and the Three Hummocks, at the north-western angle; Schouten and Maria Islands, on the east coast; and Bruny Island, on the south. The 100-fathom line of soundings round Australia includes all these islands and Tasmania itself, indicating the former union of the two countries.

2. *Physical Features.*

Tasmania may be called the Switzerland of the south, and is perhaps the most thoroughly mountainous island on the globe. It can hardly be said to have any mountain ranges, but is one continuous series of mountains and valleys, peaks and glens. The highest mountains just exceed 5000 feet; but there are more than twenty which range between 4000 and 5000 feet, and these are pretty evenly distributed over the whole island, being found in the north-east, north-west, centre, and south. The south-eastern portion only is somewhat lower, but is equally mountainous, the heights ranging from one to three thousand feet. We have here an admirable example of the effects of sub-aerial denudation, or the eating away of a country by atmospheric agencies,—rain and running water, frost and ice, assisted perhaps by subterranean movements. The island was once a vast undulating table-land, the surface of which is generally indicated by the

higher mountain tops now dotted over its whole surface. The valleys have been excavated in the softer or more decomposable rocks. There has probably been a subsidence towards the south-east, indicated by the lower elevation of the mountains, and by the islands, peninsulas, and generally broken character of the coast. In this direction is the great line of valleys, which affords the means of communication between the north and south of the island. In the north-east and west-central portions are extensive tracts of high table-land, from which rise the two highest of the mountain-peaks,—Cradle Mountain in the west (5069 feet), and Ben Lomond in the east (5010 feet).

3. *Rivers.*

Tasmania abounds in rivers, often navigable at their mouths, flowing amid fine scenery and magnificent forests, and often adorned with picturesque waterfalls. The largest is the Derwent, which rises in the central plateau, and enters the sea at Hobart Town; the Tamar, which receives its chief supplies from the north-eastern plateau, and, after passing Launceston, forms a fine estuary, into which flow the united waters of the Macquarie and the Esk; the Heron, in the south, though a short river, is navigable, and has a noble estuary; the Gordon and the King rivers, on the west, flow into Macquarie harbour. In the north-west are the Pieman and Arthur rivers; in the north are a great number of small streams,—the Forth, the Mersey, and the Ringaroma, being the largest; on the east the water-parting is very near the coast, and there are no rivers till we come to the Swan and Swanport in Oyster Bay, with the Prosser and the Coal River in the south-east.

4. *Lakes.*

Tasmania shows itself to be a truly alpine region by the possession of numerous mountain lakes near the sources of its rivers. The largest are Great Lake and Lake St. Clair, in the central plateau, and forming the sources of the Derwent and its branches. The former is about 12 miles long, and has an area of 28,000 acres; the latter is somewhat smaller, being 10 miles long and covering about 10,000 acres. Arthur's Lake and Lake Echo are nearly as large, and there are a great many smaller lakes and mountain tarns. Most of these are very deep, situated in rock-basins, and owing their origin to the same causes which have produced the beautiful lakes of the European Alps, of Scotland, Cumberland, Wales, and other mountainous countries in the temperate zone.

The scenery of Tasmania is picturesque and varied. Its higher mountains are snow-capped for a large part of the year, while their slopes and valleys are clothed with evergreen forests. Fine peaks, rocky precipices, rushing streams, and foaming cataracts, alternate with fertile plains and valleys, or grassy uplands. The central valley and its branches furnish much fertile land, and it is here that the best cultivated tracts are seen. Here are well-fenced fields, highly-cultivated gardens, good roads, well-built homesteads, and all the characteristics of the best parts of England. Mr. William Howitt (writing in 1854) thus describes the portion of this valley between Campbell Town and Hobart Town:—"The country, the farther we advanced towards Hobart Town, increased in beauty. The valley along which we drove became narrower, the hills more lofty, and much more varied in their outline, than any Australian scenery which I had yet seen. The valleys were rich, and, for the most part, as well cultivated

as in England. Owing to the difference of tenure here and in Victoria, a very different state of things has been the result. Here the occupiers of the land are the owners, not mere squatters who have no sure tenure of the land, and therefore do nothing to it. Here then, instead of mere isolated wooden huts, standing in the unappropriated forest, we have a constant succession of towns and villages bearing the singular medley of names which colonists delight in, — Ross, Oatlands, Green Ponds, Brighton, Bagdad, Jericho, Jerusalem; and, of course, the river Jordan. All round these villages, which consist of substantial and even elegant houses, extend the richest fields, enclosed with hedges, generally of sweet-brier, or furze, or broom; but also a good many of honest English hawthorn. There you see cattle, sheep, pigs enormously fat, and abundance of poultry of all kinds, feeding and flourishing in their respective resorts — the meadows, the woodland slopes, or the farm-yards. It is England all over. Everywhere you descry lovely country houses, with all the earthly blessings of fine gardens well walled in, with their conservatories and forcing-houses, their extensive shrubberies, verdant parks and lawns, fields in pasture or under the plough, and woods sloping down solemnly from the hills, with a very tempting aspect. Many of these hills are remarkably steep, yet so rich and smooth are they, that the farmers have ploughed them to their very summits, and grow splendid crops of corn where you would hardly have supposed that a team could have maintained its footing."

5. *Climate, Natural History, and Geology.*

The climate of Tasmania has many advantages over that of any other part of Australia, and it is hence termed the sanatorium of the south. Owing to its small area and

exceedingly uneven surface, a considerable elevation, with a corresponding change of temperature, is everywhere within reach by a journey of a few hours. It possesses the full summer heat due to its latitude, and even some excess, for it feels the hot northern winds from the Australian plains; but, however hot the days may be, the nights are always cool and refreshing, owing to the proximity of lofty mountains and the cool Antarctic seas. The mean temperature of Hobart Town is 54½° Fahr. The mean summer temperature is 62° with a maximum (rarely) of 100°, while the mean of winter is 47° with a minimum rarely falling below 29°; though on the uplands at an elevation of 2000 feet it often sinks to 18° below the freezing point, producing ice of a considerable thickness. Rain varies in quantity in different parts of the island, Hobart Town and the east coast having little more than 20 inches, Launceston about 30, while Macquarie Harbour has over 100 inches. But it also varies greatly at the same place, Hobart Town having a range of from 14 to 40 inches. The rainfall, though small, is well distributed over the year, the mean number of days on which rain falls at Hobart Town being 145, occurring more or less in every season. There is abundance of wind, often violent, but thunderstorms are rare. The atmosphere is rich in ozone, and epidemic diseases are almost unknown. The climate of Tasmania is highly favourable to infant life, nine out of every ten born surviving the first year; and it is especially restorative to enfeebled constitutions from warmer countries.

Flora.—Although the physical features and climate of Tasmania are so marked, and the island is separated by so wide an area of the sea from the Australian continent, yet its flora is essentially Australian, and more especially allied to that of the mountainous parts of Victoria. Out of 1063 species of flowering plants only 280 are not

Australian, while only 22 genera and 267 species are peculiar to Tasmania. It is curious that, although apparently so isolated from all the world except Australia, this island possesses a considerably larger number of European genera and species of plants, as well as a larger proportion of plants characteristic of New Zealand and the Antarctic lands than are found in Australia itself. The forests abound with valuable timbers, the blue gum (*Eucalyptus globulus*) often reaching a height of more than 300 feet, while the celebrated Huon pine (*Dacrydium Franklini*) is a most valuable timber for ship-building. Beautiful flowers abound; the Epacrises, Compositæ, Rutaceæ, and Leguminosæ are rich in species, and there are nearly eighty distinct kinds of terrestrial orchideæ, many of them having the most curious and elegant flowers.

Fauna.—It is somewhat remarkable that the animal life of Tasmania offers more striking peculiarities than do its vegetable forms. It possesses two remarkable mammals, each forming a distinct genus, and both quite unknown on the mainland. One is the "tiger wolf" of the colonists—the *Thylacinus cynocephalus* of naturalists—the largest of the carnivorous marsupials. It is nearly as large as a wolf, and is handsomely striped across the back and hind quarters. It is exceedingly bloodthirsty, and commits great havoc among the flocks of the settlers whose farms lie near the wooded mountains in which it dwells. The other animal is the *Sarcophilus ursinus* or "native devil," a thickset creature resembling an ugly bear-like cat. It is black with white patches, and, considering its smaller size, is even more destructive than the *Thylacinus*, and is exceedingly savage and untamable. It was formerly very abundant and destroyed great quantities of poultry and sheep, but having been persistently hunted and trapped, is now getting scarce in most districts. Both these animals are nocturnal. It is a very singular fact that both

these species have recently become extinct in Australia, their remains being found in the Post-tertiary drifts and cave-deposits. What causes can have exterminated such hardy and ferocious creatures in the one country, and preserved them in the other, it is not easy to conjecture. There are no other genera of mammals peculiar to Tasmania, but several of the species are distinct from those of the mainland; among them the *Echidna* or porcupine ant-eater, and the wombat, but the latter, though offering some differences, is not generally admitted as a distinct species by naturalists. Birds are abundant, but they are generally the same as those of the adjacent parts of Australia, no genera and comparatively few species being peculiar. There are only three species of snakes, but all are venomous.

Geology.—The extremely mountainous character of the whole surface of Tasmania leads us to anticipate the wide prevalence of the ancient Palæozoic and metamorphic rocks, and the abundance of granite. These formations constitute almost the whole of the table-lands and lofty peaks. Mesozoic rocks occur in the lower hills, and are more prevalent than in Australia. Sandstone, supposed to be of Triassic age, occurs near Hobart Town, forming hills capped with basalt. Tertiary beds occupy much of the larger valleys and plains, some of the latter being basaltic; beds of fresh-water limestone occur in the south, and there are raised beaches on both sides the Derwent River. Igneous and volcanic rocks abound. Porphyries and greenstones occur on most of the plateaus, and form parts of many of the highest mountains. Dykes or beds of greenstone are the cause of most of the Tasmanian waterfalls. These are probably all Palæozoic, while basalts occur of every age down to the Pliocene Tertiary. There are no true volcanic cones or lava-streams as in Southern and Eastern Australia. The islands in Bass's Straits are granite, which corresponds with that of the north-eastern corner

of Tasmania and of Wilson's Promontory on the opposite coast of Victoria. The Secondary sandstones produce fine building material. Limestone occurs in a longitudinal band in the Derwent valley, and on the north coast, where are extensive caves. Coal and lignite occur in many localities, and are believed to be both of Palæozoic and Mesozoic age. Some of the coal is of good quality, but the character of the country makes the mines difficult of access, and little of it is yet worked. Gold also occurs in quartz veins, as in Australia, but in no great quantity, and the mining operations are of but little importance. Rich iron ore occurs on the north coast and in many other localities. Tin, lead, antimony, manganese, and plumbago also occur, but only the tin has been worked to any extent. There are also some quarries of good roofing-slates.

Tasmania has been described as a network of ridges enclosing numerous small plains and valleys. Many of these ridges are of greenstone, with intervening valleys of Palæozoic rocks, while some of the higher peaks are capped with quartz or syenite. When the geological structure of the island is thoroughly worked out and the whole surface accurately surveyed and mapped, we shall have an admirable illustration of the effects of denudation, controlled and modified by variations in the texture and position of the rocky framework, in producing a highly complex mountain system with its intricate tracery of ravines and river-valleys.

6. *Colonisation, Population, etc.*

Tasmania was first used as a penal settlement in 1804, the convict establishment being at Hobart Town, but about the same time the northern coast was colonised from Sydney, and a settlement was made at Launceston in 1806. At first the infant colony made little progress,

and often suffered from scarcity of food. In 1818 the total population of the island was 3240, but by 1821 it seems to have doubled, while in 1841 it had increased enormously, amounting to 57,420. From this time it continued to progress steadily, but the gold fever in Australia caused a great exodus of adult males, from which it has hardly recovered. The population, estimated up to December 1876, is 105,633, and there are nearly six thousand more males than females. More than half of the inhabitants are native born, and rather more than a third are natives of the United Kingdom, the proportion of other nationalities being very small as compared with what exists in the other Australian colonies. Tasmania is, in fact, very English, in the ways and ideas of the people as well as in many of the characteristics of the climate and the scenery.

7. *Aborigines.*

The aboriginal population, which was never numerous, has now become entirely extinct, the last of the race, an old woman, having died in 1876 at the age of seventy-three. At the time of the colonisation of the island it is estimated that they numbered six or seven thousand. These people were in many respects a peculiar race, quite distinct from the Australian natives, and more resembling the races of Melanesia. They were shorter and stouter than Australians, with flatter noses, but the great difference was in the hair, which, instead of being fine and silky, was rough and woolly, like that of most of the African and Papuan tribes. Their distinctness from the Australians is further proved by their total ignorance of the two characteristic weapons of that country—the boomerang and the throwing-stick. They used no weapons but a spear thrown by the hand, and a club. They had no

shields. Their huts were as rude as those of the Australians—mere open shelters from the rain and wind. They had no clothing, no pottery, and no agriculture. Although living on an island, and everywhere near the sea or navigable rivers, they had no boats, and only a few tribes on the south and west coasts constructed rude rafts propelled with common sticks in place of paddles or oars. Their only other manufactures were baskets and string. They were long believed to be ignorant of the art of making fire, as they were so very careful never to let it become extinguished; but "fire-sticks" similar to those used by most savages have been found among them, and it is therefore more probable that the women were made to keep up a constant supply of fire in order to save the men from the considerable labour and delay of procuring it by friction in a country where suitable, dry, and easily ignited wood was not always to be found. They were not cannibals, and do not appear to have treated their women with the same reckless barbarity as the Australians. They burnt their dead, and are said to have had a distinct belief in a future state. Although so low in all the material indications of civilisation, there is reason to believe that they were far higher than the Australians both intellectually and morally. When the last remnant of them were living on the islands in Bass's Straits, they showed not only an aptitude, but a positive love of learning. They became cleanly in their habits and neat and orderly in their dwellings. The men became industrious; they made roads, and worked in the fields, and they took great delight in games, such as cricket, dancing, swings, and marbles. The women learnt to sew, and made mat dresses for themselves and their families; and all this is said to have been done without compulsion or pressure, but of their own free will. Taking all these things into consideration, we cannot but believe that here

was a race with capacities for advancement which never had an opportunity of development till too late. Their first introduction to civilisation was through rude sealers who visited the coasts, and the vilest convicts who escaped into the interior. Their country being occupied by white invaders, they made war against them in vain. Even the mistaken kindness of the more humane settlers and of the Government became their ruin; for the gifts of clothing they received, in addition to that which they captured in their numerous successful raids on the houses of the early settlers, worn for a time and then lost, bartered, or thrown aside, rendered them susceptible to cold, and thus brought on the lung-diseases that, more than any others, proved fatal to them. Thus has passed away an interesting race, whose affinities are a puzzle to the anthropologist. Their origin will probably ever remain an unsolved enigma.

8. *Productions and Trade.*

The special production of Tasmania is fruit, and for this its climate is so favourable that it could supply all Australia with preserves if it had cheap sugar and open markets, but the colonial tariffs prevent this. Notwithstanding these difficulties, the export of fruit and jam in 1876 amounted to the large sum of £136,774. Mr. A. Trollope declares that the fruits he ate in Tasmania—cherries, greengages, mulberries, etc.—were finer than any English fruits, and they abound so that they often rot on the trees, not being worth picking. Hops also are largely grown, and wine was exported in 1876 to the value of £46,235. Wool, however, as in all the other colonies, is the most important article, the value exported in 1876 being £439,603. Cheese and butter, wheat, hides, horses, sheep, and beer made in the colony, are other articles of export.

The only metals produced to any extent are gold and tin. In 1876 tin was exported to the value of £100,000, while in the same year the gold only amounted to £41,861. Sufficient coal is worked for the use of the colony. Timber is exceedingly abundant, of great variety, and of admirable quality. In 1871 it was exported to the value of £34,285. The total exports of the colony for 1876 were £1,130,983.

9. *Roads, Railways, and Telegraphs.*

Having so long had the assistance of convict labour, many good roads have been made in Tasmania. The main road from Launceston to Hobart Town (130 miles) is macadamised and as good as the best English coach roads; and there are several other roads to towns in the east, centre, and north of the island, in fair condition and traversed by mail coaches. There are two railways—the Main Line from Hobart Town to Launceston, 133 miles; and the Western Line from Launceston to Deloraine, 45 miles. A continuation from Deloraine to Torquay on the north coast is partly made. Electric telegraphs extend along the railways and to the other chief towns, in all a length of 630 miles; but several extensions are in progress. A submarine line connects Tasmania with Victoria, and thus with the whole civilised world.

10. *Political Divisions—Cities and Towns.*

The colony of Tasmania is divided into eighteen counties, but many of these are almost wholly unsettled. Their positions are as follows:—On the south, KENT, ARTHUR, BUCKINGHAM, MONMOUTH, and PEMBROKE; on the west, MONTGOMERY, FRANKLIN, MONTAGU, and RUSSELL; on the north, WELLINGTON, DEVON, and DORSET; on the

east, CORNWALL and GLAMORGAN; and in the centre, WESTMORELAND, LINCOLN, CUMBERLAND, and SOMERSET. More important is the division of the settled districts into rural municipalities, nineteen in number, exclusive of the towns of Hobart Town and Launceston.

HOBART TOWN, the capital city of Tasmania, has a population of 20,000, and is picturesquely situated near the mouth of the river Derwent, which is here two miles wide, and forms a good harbour, and at the foot of the fine Mount Wellington, more than 4000 feet high, and often snow-capped even in the midst of summer. The city has many handsome public buildings, an excellent public library, and many good schools. There is a park of a thousand acres, called the Queen's Domain. Mr. Anthony Trollope thus speaks of Hobart Town:—"It is as pleasant a town of the size as any I know. Nature has done much for it, very much indeed; and money has done much too. It is beautifully situated, just at the point where the river becomes sea. It is surrounded by hills and mountains, from which views can be had which would make the fortune of any district in Europe. And the air of Hobart Town is perfect air. I found the summer weather to be delicious. All fruits which are not tropical grow to perfection at Hobart Town and in the neighbourhood. Its cherries and mulberries are the finest I ever saw. Its strawberries, raspberries, apples, and pears are, at any rate, equal to the best that England produces. Grapes ripen in the open air. Fruit is so plentiful that in many cases it cannot be picked from the trees. It will not pay to pick it. So much in regard to the gifts bestowed by nature on the capital of Tasmania. Art—art in the hands of convicts—has made it a pretty, clean, well-constructed town, with good streets and handsome buildings. The Government House is, I believe, acknowledged to be the best belonging to any British colony. It stands about a mile from the town, on ground sloping down to the Derwent, and lacks nothing necessary for a perfect English residence."

Many beautiful excursions can be made around Hobart Town, to the mountains, the lakes, the river Huon, the fern-tree valleys; and everywhere the scenery is lovely. The society in the town is good, and thoroughly English; there are ample facilities for education; living is cheap; and on the whole there seem to be few more delightful spots for an Englishman, wishing to live out of England, to retire to.

LAUNCESTON, the second and only other populous town in Tasmania, is situated on the north side of the island on the river Tamar,

about 40 miles from its mouth, and at the conflux of the North and South Esk rivers. It lies in a valley enclosed with hills, and the lofty Mount Barrow, 4644 feet high, is only 12 miles distant to the east. The town has wide streets, excellent public buildings, an extensive public library, and public gardens nine acres in extent. Its population is about 11,000 ; but though much smaller than Hobart Town, its trade and shipping are about equal to that of the capital, its nearness to Australia giving it a great advantage in this respect.

The only other town which has a population above 1000 seems to be WESTBURY, situated on Quambys Creek, in the County of Westmoreland, 20 miles W.S.W. of Launceston by road, but 35 miles by the railway, which takes a circuitous route. Its population is 1550, and it is in the midst of the best agricultural district in the island. Other towns are :—CAMPBELLTOWN, with 750 inhabitants, 40 miles S.E. from Launceston on the railway, and in an agricultural and sheep-grazing district ; DELORAINE, with 800 inhabitants, at the terminus of the Western Railway ; FRANKLIN, with 600 inhabitants, on the river Huon, 26 miles S.W. of Hobart Town, in a thickly-timbered and fruit-producing district ; NEW NORFOLK, with 870 inhabitants, 21 miles N.W. of Hobart Town, on the Derwent, at the point where it ceases to be navigable, and in a hop-growing district ; and STANLEY, with about 600 inhabitants, a seaport on the north coast, in the county of Wellington, and situated on the promontory of Circular Head : potatoes are largely exported from here to Victoria.

The remaining rural municipalities, with their distances from the chief town, are as follows :—In the south, on the road to Launceston, GLENARCHY, 5 miles from Hobart Town ; GREENPONDS, 28 miles ; and OATLANDS, 51 miles : in other southern localities, SORELL, 13 miles east of Hobart Town, on Pitt Water ; RICHMOND, 14 miles N.E., on the Coal River ; HAMILTON, 40 miles N.W., on the Clyde, in Monmouth County ; BOTHWELL, 45 miles N.N.W., also on the Clyde ; and SPRING BAY, 55 miles N.E., in Pembroke County : and on the north side EVANDALE, 11 miles S.S.E. of Launceston ; LONGFORD, 14 miles S. ; ROSS, 48 miles S., on the road to Hobart Town ; and FINGAL, 66 miles S.E., on the South Esk River in Cornwall.

11. *Government, Religion, Education, etc.*

The Government of Tasmania consists of a Governor appointed by the Crown, and two Houses of Parliament—a Legislative Council and a House of Assembly. The

Legislative Council consists of sixteen members (who must be over thirty years of age) chosen for six years by £30 freeholders, officers in the army and navy, graduates of a university, clergymen, and doctors. The House of Assembly consists of thirty-two members, who are chosen for five years by £7 householders or freeholders, and persons qualified to vote for the Legislative Council. All elections are conducted by ballot. The ministers must have a seat in Parliament. No religious denomination is subsidised by the Government. The Church of England predominates, having 53,000 members, and 100 places of worship; the Roman Catholics number 22,000, with 32 churches; and all other sects about an equal number, but with a larger proportion of chapels. Education is compulsory, and there is a Council of Education for the higher branches, and a Board of Education for elementary instruction. There are schools in every township giving a free education, and attendance is secured by a heavy fine on the parents. The two chief towns have several high schools and colleges, and degrees are conferred by the Council of Education on such pupils as attain the prescribed standard. There are also two scholarships of £200 a year for four years at a British university offered for competition annually. Sunday schools, also, are largely attended; there are good mechanics' institutes and libraries in all the chief towns; and, on the whole, there are probably few, if any, British colonies, where the intellectual, moral, and religious wants of the community are better supplied than in Tasmania.

MALAYSIA, OR THE MALAY ARCHIPELAGO.

CHAPTER XIII.

GEOGRAPHICAL AND ETHNICAL SURVEY OF THE ARCHIPELAGO.

1. *Geographical Outline.*

OF all the great island groups of the globe, the richest in every respect is the Malay Archipelago, lying between Southern Asia and Australia, and made up of the fragments of two continents, although now forming a distinct geographical unit. There is every reason to believe that Asia and Australia were united during the latter part of the Secondary epoch, while the processess of subsidence and upheaval resulting in the present insular formations were not fully developed till a much later period. The Australian continent was probably first broken up, as indicated by the very deep seas which now separate the several islands of the Moluccas from each other; while the Asiatic continent may have remained longer entire, and its comparative recent subsidence is equally well shown by the very shallow sea—always under fifty fathoms deep—which separates the great islands of Java, Sumatra, and Borneo, from each other and from the mainland of Southern Asia. The extensive submarine plateau comes to an abrupt termination at the little island of Bali, east of Java, there being a channel of great depth, though very narrow, between it and the adjacent island of Lombok.

The same deep channel is continued northwards through the Straits of Macassar and the Celebes Sea, and between the islands of Mindanao and northern Celebes, into the Pacific Ocean. Hence one-half only of what is sometimes called the East Indian Archipelago, and included in Asia, is really connected with that continent. The eastern half is essentially Australasian, not only as regards the history of its origin, but also in its fauna and flora. Even ethnically this extensive insular system belongs to two clearly distinct races—the Malay and the Papuan—so that the current expression "Malay Archipelago," here adopted, is deficient in thorough accuracy. The line dividing the two typical races lies, however, considerably to the east of that which separates the two zoological regions, the Malays extending to Celebes, Sumbawa, and to most of the islands of the Moluccas.

But, while conforming to the hitherto received custom of arbitrarily including under one appellation the whole of the archipelago as far as the Moluccas and Timor, we may here still recognise several distinct groups traversed in great waves by one of the mightiest and most active volcanic systems on the globe. These groups are—in the north the Philippines, followed to the south by the Moluccas; farther westwards, by Celebes and by the Lesser and the Greater Sunda Archipelagoes, by the latter of which are understood the three large islands of Sumatra, Java, and Borneo.

All these groups—of which the Philippines with Sumatra, Java, and Borneo, are properly Asiatic—are separated from each other by straits or passages, each bearing a distinctive name. By far the greater number belong politically to Holland, which here possesses a colonial empire with its seat in Java, rivalling in prosperity the British East Indian possessions. Besides the Dutch, we find the Portuguese established on the Austral-

asian island of Timor, while the Spaniard rules almost exclusively in the Philippines. Some islands or portions of islands are still independent, or subject to native sultans.

2. *Physical Features — Volcanoes.*

The Malay Archipelago is traversed throughout its whole extent by one of the most extensive and continuous volcanic belts upon the globe. Commencing in the north-western part of Sumatra, beyond the equator, it extends through that island and Java, then through the Lesser Sunda Islands to the east end of Timor. Here it turns in a north-easterly curve by Banda, Amboyna, and Bouru, to Gilolo and Ternate. Thence, turning westward to the northern extremity of Celebes, it bends abruptly to the north, and passes through the entire range of the Philippines to the extreme north of Luzon. The number of true volcanic peaks and craters in this belt is very great, and they form a continuous chain, with seldom more than an interval of a hundred miles from one to the other. A very large proportion of them are in a state of activity, and many have devastated the surrounding country within the historic era. In Sumatra there are five active volcanoes, in Java twenty, in the Lesser Sunda Isles seven, in the Banda and Molucca groups about the same number, in N. Celebes and the adjacent islands four or five, and in the Philippines more than a dozen. Many of these are perpetually smoking, while others have been frequently in eruption since the occupation of the country by Europeans, and have often been accompanied by disastrous earthquakes. Hardly less remarkable than the extent and continuity of this belt of volcanoes is the complete absence of all volcanic vents in the surrounding districts. The great island of Borneo, and all of Celebes except the extreme northern point, are absolutely free

from all signs of recent volcanic action; and the same may be said of every island which lies on either side of the band,—as the Peninsula of Malacca, Madura, Sumba, Timor Laut, Ceram, Mysol, New Guinea, and Palawan. In all these countries we have ancient crystalline rocks, granite, and extensive Tertiary beds, but no indication of volcanic outbursts. From the acknowledged fact of the very general vicinity of active volcanoes to the ocean, we may perhaps interpret this phenomenon as pointing out to us, in this great volcanic band, the outer limits of very ancient continents, while the lands on either side have once formed inland portions of those continents. This agrees sufficiently well with what we know of the existing distribution of animal life, if we suppose Celebes and the other islands to the eastward, as far as the volcanic belt, to have been separated from Asia at a very early period, when its fauna assimilated much more with that of Australia than it does now; while the islands to the west of Celebes were only separated from the continent at a very much later epoch, after they had participated in all the more recent and higher developments of its flora and fauna. This view will explain some of those great peculiarities of the fauna of Celebes to which we shall have to refer when treating of that island.

In this extensive chain of volcanic mountains many attain great heights, especially in Sumatra and Java. Each of these islands has one mountain about 12,300 feet high, while the former has four and the latter eight which exceed 10,000 feet. In no other part of the chain, except in Bali and Lombok, immediately east of Java, are there any heights which approach these. The volcanoes of the Philippines and Northern Celebes do not appear to exceed 6000 or 7000 feet, and those of the Moluccas from 4000 to 5000. There is only one mountain in the whole Malay Archipelago that exceeds in height the lofty

peaks of Sumatra and Java, the isolated mass of Kini Balou, near the northern extremity of Borneo, which is said to be 13,698 feet high, and which is probably far higher than any other mountain in the island, or than any non-volcanic mountain in the whole Archipelago. The summit of Kini Balou is syenitic granite, and it probably represents a portion of the most ancient extension of the Asiatic continent in Tertiary or Secondary times, since it contains plants allied to some now only found in temperate Australia.

From the position of these Malayan islands between 19° north and 10° south of the equator, they all enjoy that equability of climate and abundance of moisture which are so highly favourable to the growth of arboreal vegetation, and which have produced the great forest-belt everywhere girdling the earth in the equatorial zone. Hence the general condition of almost all the islands is to be covered with luxuriant tropical forests where not destroyed by man, and this forest-covering even spreads over all except the very highest summits or precipitous rocky slopes of the mountains. There is only one portion of the region where there appears to be a natural deficiency of forest, due to peculiarities of climate caused by the vicinity of the heated interior of Australia. From the east end of Java through all the islands to Timor Laut, the dense forests that everywhere cover the other islands are the exception rather than the rule, occurring only in valleys and on the moister slopes of the mountains. The rest consists of grassy plains, dotted with palms and thorny bushes, which latter often form dense and impenetrable thickets. During the prevalence of the south-east monsoon, from April to October, scarcely any rain falls in this area, and towards the latter end of this dry season the drought is so great that many small streams dry up, and most of the trees lose their leaves. The heat is then

intense; and were it not that the nights are cool and a breeze always blowing, the climate would approach in severity that of Australia itself. As it is, the chief effect is seen in the long-continued dryness of the atmosphere being inimical to that luxuriant forest growth which elsewhere in the equatorial zones clothes the earth with perennial verdure, and affords a constant protection from the rays of the vertical sun. The only other parts of the Archipelago where any extent of open country occurs are in Northern Borneo, in Southern Celebes, and some of the Philippine Islands, but in these cases it is probably due to human agency aided by the introduction of cattle which have become wild. The densely-peopled plains of Java and the elevated plateaus of Sumatra are highly cultivated, and have been so long the seat of an ancient civilisation that the absence of forest is clearly not to be considered a natural feature.

3. *The Malay Race and Language.*

Of the two indigenous races of the Archipelago, the Malays and the Papuans, the Malays are decidedly the more highly developed, the more populous and important. They have spread their language, their domestic animals, and some of their customs, widely throughout the Pacific and Indian Oceans, in many instances to islands where they have effected no sort of change in the physical or moral characteristics of the indigenous inhabitants. This wide diffusion of Malay influence is an extraordinary phenomenon, for the Malay race itself has by no means such an extensive range, although it has been generally supposed that all the brown tribes with straight or nearly straight hair, generally termed Polynesians, which are widely scattered in the tropical and sub-tropical South Sea Islands, belong to this division of mankind. Since W. von Hum-

boldt's studies of the old Kawi language of Java, we know that the dominant race in Madagascar and the Comoro group also belongs to the Malay linguistic family. Hence the common statement that this race has spread from the Comoros to Easter Island, lying between the 45° E. long. and 110° W. long., or more than half the circumference of the globe.

But this view as to the extent of the Malayan peoples is held by many modern writers to be quite erroneous, and they accordingly give the Malays a much more restricted habitation. The editor of this volume has always maintained that the brown Polynesians are really quite distinct from the Malays, and, except in colour, seem to have more affinity with the dark woolly-haired races of the Pacific; or, which now seems more probable, are equally distinct from both. This view is supported by two writers who have great knowledge of the races and languages of the Pacific. Mr. W. S. W. Vaux, in a paper on the *Probable Origin of the Maories*, read before the Anthropological Institute in 1876, maintains that there was once a distinct Polynesian language, and that the connection of the modern languages of the brown Polynesians with the Malay is by no means so intimate as many able philologists have asserted. Still more important and weighty is the evidence of Mr. W. L. Ranken, who, in a paper on the *South Sea Islanders*, read before the same society a few months later, proposes the native term "Mahori" for the brown Polynesians, and shows that their language is totally distinct from the Malay, has a different construction, has very few Malay roots, and only a few quite recent Malay words. Though resembling Malays both physically and mentally in some respects, the Mahoris differ greatly from them in others. They have a much greater average height, their features are much more of the European type, and their hair is typically wavy. He traces this race to Samoa as

their first home in the Pacific, but primarily from some part of the Asiatic continent. He says—"We are thus led to these conclusions: that they are of some kindred race to the Malays, of Mongolian stock; that they have separated from that stock as distinctly, and perhaps as early, as the Malays themselves, and always had a distinct language; that they dwelt some time in Papua, and perhaps in other lands of the Malay Archipelago, and there learnt some new words from Malay traders; thence they migrated to Samoa, and have since colonised the South Sea, sometimes displacing Papuan settlers. In spreading northward from Samoa they met another branch of their own family in the Kingsmill Islands, who had probably travelled along the Caroline Archipelago from the Philippines, and show another exodus of the same family about the same time." This convergence of the views of three modern writers, each starting from a different point and reasoning from a distinct set of observations, as to the radical distinctness of the Malays and the brown Polynesians, will justify us in giving up the term Malayo-Polynesian as altogether misleading. We shall therefore adopt Mr. Ranken's name "Mahoris" as equivalent to that of "Brown Polynesians" used by many authors.

The Malays belong then, undoubtedly, to the so-called Mongolian division of mankind, and this is well illustrated by the strong resemblance between some of the higher types of each. In the island of Bali, A. R. Wallace was unable to distinguish them from some Chinese immigrants who had laid aside their national dress. They are of a brown complexion and somewhat small, the men being on the average three or four inches below the mean European height. The face is of a somewhat square or rather rhomboid form, not much longer than broad, with high and prominent cheek-bones; eyes black, but rarely oblique; mouth wide and large, with thick well-cut lips; broad lower

jaw; round and shapely chin; nose small and short, neither flat like the Negro nor prominent like the European; nostrils very dilated; occiput flat and square, with thick, coarse, black hair, but with weak and scanty beard, and that almost invariably plucked out by the roots. The sexes resemble each other so closely that strangers are often at first puzzled to distinguish between the two.

The Malay is naturally of an easy-going, indolent character. In his intercourse with others he betrays a certain reserve, diffidence, and even shyness, which has induced many to suppose that there must be some exaggeration in the current accounts of his savage and bloodthirsty nature. He never gives open expression to a sense of astonishment, surprise, or fear, and is probably little affected by such sentiments. Slow and deliberate of speech, he leads up in roundabout ways to the subject he may have come expressly to inquire into. Both women and children are timid, and shrink from the unexpected sight of a European. In the society of the male sex they are silent, and in general quiet and submissive. When alone the Malay is gloomy and taciturn, never either singing or talking to himself. But when paddling together in canoes they will occasionally chaunt a monotonous, wailing song. They seldom offend each other, nor are they prone to wrangling over money matters, scarcely venturing even to claim what is lawfully their own. Coarse horse-play is especially repugnant to them, the Malay being extremely sensitive on all points of etiquette and of encroachments on his personal freedom. The upper classes are exceedingly courteous, comporting themselves with all the quiet dignity of a well-educated European. Yet this outward refinement, strange to say, co-exists in them with the most pitiless cruelty and contempt of human life, traits which belong to the dark side of their character. Herein lies the explanation of the many

diametrically opposed judgments, in the various accounts given by observers, of their mental characteristics.

Some tell us that these dwellers by the sea are ever hospitable and trustworthy, quiet and extremely indolent, but with an insatiable passion for gambling, which all prohibitive measures have failed to suppress. Other accounts describe them as impulsive, without self-control, little to be relied upon, and of fickle disposition. Improvident, lazy, and averse to work, they would gladly assume the *rôle* of superior beings, whose lofty aspirations and sense of freedom are degraded by the menial occupations necessary to secure a livelihood. They are, however, distinguished by greater energy and acquisitiveness from the other races of the Indian Archipelago, though Islam has deprived even them of all higher aims in life, splitting up their local communes, and reducing their pursuits mainly to navigation and piracy. Theft and kidnapping are thought lightly of, while insults, real or imaginary, are savagely avenged on the spot. They are, at the same time, unforgetful of wrong, false and wily, so that solemn oaths are uttered with no intention of keeping them, and poisonings are very common. They are passionately fond of opium-smoking, though this is a less common vice than among the Chinese; and of betting over their cock-fights, often staking their very selves and their personal freedom on the issue. On the other hand, they are very frugal; and characteristic of their contentedness is the current expression asking for a present: "Kachil presentie, tuwan, poer makan;" that is, "A little present, sir, to eat." Hence the eating-houses take the place of our drinking-houses, and are their chief places of resort. Here they indulge in dry rice, capsicums, little scraps of meat or fish, cooked vegetables, and sweet titbits handed round with a cup of hot water.

The Malays are nominally Moslems, but lack the

fanaticism of that religion. The Javanese, especially, consider they have done enough by observing the rite of circumcision, the prescribed ablutions, and the Ramadan fast, while at the same time retaining many of the old Hindoo ideas. Some of them are Christians, that is to say, they attend the services of the Dutch Church, abstain from shaving their heads or filing down their teeth, and drink wine and spirits.

The *lingua franca* of the whole East Indian Archipelago is the Low Malay, which contains no rough or harsh gutturals or other consonants difficult of utterance, but is soft and musical, in its liquid sounds somewhat resembling the Italian. All Europeans in the Dutch and English possessions speak this language, which is easily and rapidly acquired.

The Malays, to whom the preceding description is generally applicable, and who agree closely with those of the Malayan Peninsula, inhabit all the islands from Sumatra to Sumbawa, Celebes, the Philippines, Bouru, and Ternate, with outlying settlements in Gilolo, Ceram, Amboyna, Banda, and at several points on the Papuan islands. Only a small portion of these speak the Malay language, which is found chiefly in the central plateau of Sumatra, and around the coast of Borneo. In every other part of the Malayan area other languages are spoken, some of which are dialects of Malay, others distinct but allied languages; while many, as the Bugis of Macassar, and especially the languages of the people of Ternate and Tidori, are totally unlike Malay.

Again, the Malays may be divided into two great groups—the savage and the semi-civilised peoples. The Dyaks of Borneo are the best example of the former. They have no writing or literature, no regular government or religion, and they wear only the scantiest clothing of

the usual savage type. But they are by no means a low class of savages, for they build good houses, they cultivate the ground, they make pottery and canoes, they work in iron, and they even construct roads and bridges. In the same stage are some of the inland tribes of Sumatra, Celebes, and Bouru. The semi-civilised people comprise all the other Malayan tribes. These possess written languages, and many of them peculiar alphabets; they have some scanty literature, established governments, and some form of religion; they wear a regular costume, they spin and weave cotton or other textile fabrics, and make use of a considerable variety of tools and weapons. We will now pass on to the consideration of the several geographical divisions of the Archipelago which the various tribes of Malays inhabit.

THE PHILIPPINE ISLANDS.

CHAPTER XIV.

THE PHILIPPINE ISLANDS.

1. *Geographical Outline.*

THE Philippines extend almost due north and south from Formosa to Borneo and the Moluccas, embracing an extent of 16° of latitude and 9° of longitude. To the north the nearest land is the island of Formosa, distant about 175 miles; to the north-west China is distant about 300 miles; to the south Borneo about 80 miles; and to the south-east the Tulour Island, the northernmost of the Moluccas, about 140 miles. If, however, the Sooloo Islands are included in the Archipelago, it must be considered to approach within about 20 miles of the north-eastern peninsula of Borneo.

According to Spanish authors, the Philippines amount to 408 islands, exclusive of mere rocks and uninhabited islets. Two islands are pre-eminently large—Luzon, which is larger than Ireland by a half, and Mindanao, which exceeds it by a fifth. Seven others are of considerable size—Samar, Leyte, Zebu, Negros, Panay, Mindoro, and Palawan—the largest of these, Palawan and Panay, being each about half as large as Sicily, and the smallest, Zebu, about one-fifth the size of that island. Then come two, Bohol and Masbate, considerably smaller than Zebu; after which are about 20 islands, such as the Calamines, Marinduque, Basilan, and Catanduanes, all of which are larger than Singapore. The entire archipelago is said to contain an area of about 200,000 geographical square

miles, but this estimate must include the almost land-locked water surface between the islands, as the actual land area is only about 114,000 square miles.

Most of the islands lie in a general north and south direction, and have mountain chains running through them; and if we leave out Palawan and the Sooloo Islands, the remainder form such a compact group, with such narrow straits between them, as to have all the appearance of one great island which has been broken up by submergence and volcanic action. There is, in fact, no other archipelago on the globe which contains so many islands compactly massed together as the Philippines.

With the exception perhaps of Palawan, all the islands are more or less volcanic, and form a part of the great volcanic belt which passes through the entire Malay Archipelago. The active volcanoes, however, seem to be confined to the two large islands Luzon and Mindanao; but many of the other islands contain extinct craters, and some of them solfataras and hot springs. The geological formation of the islands is very little known, but the occurrence of gold in quartz veins, of lead and copper ores, of metallic copper in the southern part of Luzon, and of gold in Mindanao, are indications of the presence of crystalline rocks probably of Palæozoic age. Limestone also abounds, and almost everywhere raised coral reefs indicate the recent elevation of much of the country.

All the larger islands are abundantly supplied with rivers, and as there are almost always extensive plains between the mountains and the sea, large tracts of land are overflowed and fertilised by them. Both Luzon and Mindanao contain many large lakes in the interior. The climate varies with the latitude, which ranges from 5° north of the equator to within the same distance of the tropic of Cancer. The northern portion is subject to the north-east and south-west monsoons, the

first being the most violent. At the changes of the monsoons occur the terrific hurricanes known as typhoons. They are most prevalent in the month of October, and often devastate the country, destroying both life and property to as great an extent as the most violent earthquakes, which are also frequent in the same districts. Within ten degrees of the equator typhoons are unknown, so that the large island of Mindanao is exempt from this scourge. The rainfall is very great, being 98 inches at Manilla, and it is also very regular; but, as much of it falls in a comparatively short time, a great extent of the flat country becomes flooded, the rivers overflow their banks, and are converted into temporary lakes many leagues in expanse. The temperature is high, but not excessive; and, owing to the great amount of sea which interpenetrates among the islands, it is almost as uniform as in places on the equator. At Manilla the thermometer never falls below 72° nor rises above 95° Fahrenheit. The greatest heats are from April to August, but they are said by Spaniards to be never so oppressive as those of Madrid.

2. *Scenery.*

Entirely within the tropics, and lying in a neutral zone between the monsoons and the north-easterly trade winds, with infinitely diversified coast outlines and meridional ranges, with a mean elevation of 3000 to 4000 feet, and isolated volcanoes and crests rising to a height of 8000 feet, the Philippines, with numerous rivers, streamlets, and upland and lowland lakes, possess all the conditions for the most luxuriant tropical vegetation, and all the elements of the finest tropical scenery. In truth, the archipelago is in these respects fully worthy to be compared with the most famous tropical regions, such as Brazil, Java, and Ceylon. The light green foliage of the

lowlands contrasts vividly with the pine forests of the lofty mountain summits, for here the conifers are wedded to the palm, while the lowland streams are fringed with feathery bamboos. Half concealed by cocoa-nut palms lie the towns and villages, amidst the vivid green of the rice fields and sugar plantations; while the woodlands and gardens are beautiful with the dazzling hues of their blossoms and fruits. From this vegetation the native women seem to have acquired the art of clothing themselves in the brightest colours, without offending our more educated sense of taste. For here the wealth of colour in which plants, animals, and man himself are arrayed, harmonise perfectly with the fulness of light poured down by a fierce tropical sun on the bosom of the earth. But amidst this glorious vegetation there lurks the serpent ever ready with its deadly spring or venomed fang; and no more here than elsewhere does mankind enjoy the cup of peaceful bliss undisturbed. The populous towns and villages are decimated by frightful epidemics—smallpox and Asiatic cholera; while erratic flights of locusts, darkening the heavens like dense clouds, devour the young crops, leaving hunger and famine in their wake. With the change of the monsoons the swollen streams overflow the land; and when the industrious Tagal fancies he has escaped the devastating floods in his log hut or stone house, he is suddenly buried by an earthquake beneath its ruins, or else stifled in a burning rain of cinders from some new-born volcano.

3. *Natural History.*

The flora of the Philippine Islands is very little known, the difficulties till recently thrown by the Government in the way of scientific investigation, together with the heavy cost of travelling, having deterred

botanists from visiting the country. The scanty collections obtained show that the vegetation is essentially Malayan, intermixed with a Chinese element; but there is little doubt that a systematic exploration would result in the discovery of many remarkable and peculiar plants. The richness of the forests is shown by the fact, that the timber of more than two hundred different trees has been experimented on in the arsenal of Manilla, resulting in the selection of six as specially adapted to shipbuilding. Two of these are species of *Vitex* (Verbenaceæ), one is a *Vateria* (Dipterocarpeæ), another is a *Sterculia*. Dyewoods are abundant, and the sapan wood, produced by the *Cæsalpinia sappan*, obtains the highest price in European markets. Teak is found in Mindanao, and it is said to occur nowhere else in the Malay Archipelago but here and in Java. Gums, resins, and textile materials are also abundantly produced, but the species of plants which yield them are for the most part unknown. This is the case even with St. Ignatius's beans, the source of the deadly poison strychnine, which is commonly sold in the market at Manilla. Most of the fruits of the other Malayan countries abound, except the mangosteen and durian, for which a strictly equatorial climate appears to be indispensable, and which only thrive in the extreme south of the Archipelago.

The animals are much better known than the plants, and they exhibit some curious phenomena of distribution, which throw a light on the past history of the archipelago. Although generally agreeing with the fauna of the larger Malay islands, that of the Philippines exhibits some remarkable deficiencies. These are most prominent in the mammalia, which are very few in number when compared with those of Borneo or Java. Thus the numerous apes and monkeys of those islands are represented in the Philippines by one only—the common *Macacus cynomolgus*,

which ranges over the whole archipelago. Of carnivora there are three species only, two civets and a small wild cat; all the larger felines, the weasels, bears, and wild dogs, being entirely wanting. Of the hoofed animals there are wild pigs, three kinds of deer, a chevrotain or mouse-deer, and wild cattle, but there are no tapirs, rhinoceroses, antelopes, or elephants. Even the small rodents are very scarce, there being only three squirrels, one flying squirrel, a porcupine, and two or three of the rat tribe. The flying mammals on the other hand are numerous, there being no less than twenty-four species of bats, many of them peculiar. There are also three insectivora—the curious tarsier, the flying-lemur, and a shrew. Altogether there are twenty species of terrestrial mammals known to inhabit the Philippines, and a few more, no doubt, remain to be discovered, as several have been added to the list within the last year or two. Java, however, has ninety mammalia, of which fifty-six are terrestrial, and it is therefore very curious that the Philippines, with a larger area, and divided into so many distinct islands, should have so few.

The birds of these islands are, proportionately, far more numerous than the mammals, but these also show many peculiarities and deficiencies when compared with the western Malay islands. Up to the receipt of the last collections in England (December 1877), the estimated number of the land birds of the Philippines is 220—a number which does not compare badly with the 270 species known from the much better explored island of Java. Yet no less than fifteen important genera found in all the other Malay islands are here altogether wanting, their place being supplied by an unusual number of the parrot and the pigeon tribes, in which two groups the Philippines resemble the Moluccas more than Java and Borneo. They also agree with the Moluccas in possessing

cockatoos and mound-builders (*Megapodius*); and they possess a considerable number of peculiar genera, and about 160 peculiar species. There are, however, no pheasants; and the only game-birds are the common jungle-fowl (which may be derived from escaped common fowls) and one or two small quail.

Of the other vertebrated animals little is known. There are crocodiles, lizards, and serpents in abundance, and among the latter are pythons which destroy young cattle, and are said to reach more than 40 feet in length. Insects are abundant and very beautiful, and they differ in many respects from those of the other Malay islands. Some of the butterflies are remarkable for their intense and variable metallic gloss; and there is a group of weevils, named *Pachyrhynchus*, which, though of small size, are so variously adorned with metallic scales, disposed in bands and spots, as to look like exquisite jewellery.

The Philippines are celebrated above all other Eastern countries for the variety and beauty of their land-shells, of which there are about 400 distinct species, of varied form, and often of exquisitely delicate coloration. The genus *Bulimus* is especially abundant and fine, and there are some genera which are altogether peculiar to the group.

Taking all the facts yet known as to the natural productions of this group of islands, we find a wonderful amount of peculiarity throughout, great luxuriance of development in some of the lower groups, and many deficiencies in the higher, especially in the mammalia. This luxuriance and peculiarity, combined with poverty in the forms of life, implies great antiquity and long-continued isolation from adjacent countries. The presence of a tolerable variety of mammalia, closely allied to those of other Malayan countries, shows that the time from which the isolation dates is not very remote geologically; but it is less easy to account for the absence of so many

important groups of mammalia. Two explanations are open to us. Either the former union with Borneo, and, perhaps, with Formosa, was limited in extent and of short duration, so that only a few mammalian types ever entered the country; or, the union having been more complete and of sufficient duration, the islands became well stocked with mammals; but a great amount of subsidence has since so reduced the land area and altered the physical conditions, that numbers of them, especially those of the largest size, have become extinct. This latter hypothesis is supported by the fact, that almost everywhere are found large tracts of elevated coral reefs containing shells similar to those now living in the adjacent seas; proving that at a comparatively recent period the islands have been partially submerged, and therefore less extensive than they are now. We know that all volcanic countries are subject to elevations and subsidences, and it is highly probable that so pre-eminently volcanic a district as the Philippines has been repeatedly subject to partial elevations and depressions; at one time effecting a union with adjacent lands, and thus favouring the introduction of new animals, at another submerging extensive areas, and thus leading to the extermination of many forms of life. Changes of this kind, if continued through the latter portion of the Tertiary period, would inevitably produce such a limited yet peculiar fauna as is now found to characterise these islands. Minute geological investigation, combined with a more complete knowledge of the existing fauna and flora, will alone enable us to determine how far these suppositions are correct.

4. *Native Inhabitants.*

The Philippines are inhabited by two distinct races of men, the Malayan and the Negrito; the first constitut-

ing the great mass of the inhabitants, and the latter consisting of a few tribes of mountaineers inhabiting five of the larger islands—Luzon, Negros, Panay, Mindoro, and Mindanao.

The people of Malay race are known to the Spaniards as "Indians" and "natives." They are described as having a moderate stature, broad nose with hardly any depression between the eyes, thick lips, inner angle of the eye depressed, head broader than in Europeans, hair straight, coarse, and black, beard very scanty, and complexion olive-coloured. They are thus undoubtedly of Malay race, though a distinct branch of it, with peculiar languages, customs, and character. The Spaniards divide them into two classes—those that have been subdued and for the most part converted to Christianity, and the independent tribes, some of whom are Mahometans, while others are pagans, and probably represent the aboriginal Malay race corresponding to the Dyaks of Borneo. They are divided into many distinct nations and tribes, speaking different languages, of which there are twenty in the large island of Luzon alone. The most important, however, are the Tagal, Bisayan, Bicol, Ilocano, Pangasinan, and Pampango. The Tagals inhabit the greater part of Luzon, including Manilla and the island of Mindoro, and number about a million and a quarter. The Bisayans are the most numerous, inhabiting all the islands between Luzon and Mindanao, with a considerable part of the latter island, and they number nearly two millions. The Ilocanos inhabit the north-western portion of Luzon, and number somewhat less than a million. The Bicols inhabit the provinces of Camarines and Albay forming the southern end of Luzon, and number about half a million. The other tribes are much less numerous, and of comparatively little importance.

The more civilised tribes of the Philippines may be

described as simple, docile, indolent, credulous, rather excitable, and very superstitious. The Spaniards say that they are as easily led by Europeans who take pains to understand them, as the horse or the buffalo. They are in fact led, guided, and virtually governed by the Catholic priesthood, who may be truly said to have originally conquered them, and to have maintained them ever since in subjection. This has made them less dignified and polished than some of the true Malays, but they yet have many estimable qualities. They are a good-natured, cheerful, contented, and hospitable people; and though, when first visited by the Portuguese and Spaniards, they were inferior in civilisation to the Malays and Javanese, they may now be considered as equal if not superior to them. Of all Asiatic people they are perhaps those who have made the most advance under European rule.[1] Their education has been attended to, and a large proportion of them can read and write.

Most of these people wear a national costume somewhat resembling that of the Malays; the women a "camisa" and "saya," and the men shirt and trousers. They now make use, partially, of European cottons, but the native cloths, woven from the fibres of the pine-apple and banana, are still highly esteemed. The former, called piña, are often made so fine as to rival the finest Indian muslins, and these fetch enormous prices, a single dress having been sold for more than £300. They also make cloth and cordage from a species of wild banana, called "abaca" and known in commerce as Manilla hemp. This plant grows only in certain districts, and is the subject of an extensive cultivation. Other textile fabrics are woven from native cotton and from Chinese silk, the women

[1] As an independent testimony to the character of these people we have Mr. W. Gifford-Palgrave's consular Report, dated September 1877, in which he says that the Philippine Malays are, with rare exceptions, as industrious, steady, and persevering a race, or rather races, as any under a tropical sun.

being the weavers in every case, and using native looms of the rudest construction. Mat-making is also a great specialty, as well as hats and cigar-cases made from palm-leaves and finely split rattans. The chief other native manufactures are gold filigree work and coarse pottery.

The main subsistence of the Philippine islanders is rice, but they also grow maize, yams, sweet potatoes, and some other vegetables. They use rude wooden ploughs, harrows, etc. Buffaloes are their beasts of burden, and they often employ them merely to trample the muddy ground instead of ploughing it. From a study of their languages, and by determining what objects have native and what Malay names, Mr. Crawfurd concludes, that previous to their intercourse with Malays their food consisted of the sweet potato, the banana, and other wild fruits; that they had no domestic animals; that they possessed iron and gold; and that they wore fabrics of cotton and "abacá," of which they made their clothing. They had invented a peculiar phonetic alphabet, they practised circumcision, and they believed in good and evil spirits, in sorcery and divination. Without placing too much dependence on this mode of inquiry, we may believe that the above conclusions fairly represent the early condition of the Malayan indigenes, which was that of the higher class of savages, and very similar to that of the present inhabitants of Borneo known as Dyaks.

Some of the wild tribes of the interior are still in this condition. Among these are the Ygorrotes inhabiting a mountainous district in the southern peninsula of Luzon. These people grow a little maize, yams, and sweet potatoes, but live chiefly on wild pigs, with deer and other game. They collect wax, resins, and other products of the forests. They wear no clothes but the usual waist-cloth and apron. They use spears, and bows and arrows, the latter probably obtained from the Negritos, as the bow

is not a Malay weapon; and they are described by Dr. Jagor as having somewhat curly hair, which would also imply a mixture of Negrito blood. A somewhat similar people, but of pure Malayan stock, inhabit the interior of Mindanao.

5. *Negritos.*

The Negritos, Aëtas, or Itas, as they are variously called, are a short, small, active people, of a dark colour, and with woolly hair, who are found in the interior of the five larger islands of the Philippines. Many ethnologists consider them to be allied to the Papuans of New Guinea; but their small stature, not averaging more than 4 feet 7 inches, their less pronounced features, and the form of their crania, distinctly separate them. Their crania are slightly dolichocephalic, and have the same general form as those of many Papuans, but they are much smaller, and the nasal bones very much flatter. Mr. J. Barnard Davis, from the examination of three fine crania, considered them to be distinct from any other race. Taking all their physical characters into consideration, they seem more nearly to resemble the Andaman Islanders and the Semangs of the Malay Peninsula, than any other existing races. Their national weapon is the bow, and they use poisoned arrows. They are supposed to number in all about 25,000.

6. *European Conquest of the Philippines.*

This archipelago was discovered by Magellan in 1521, but it was not till forty-four years later, in 1565, that the conquest and settlement of the islands was begun. Zebu was first conquered, then Panay; and it was not till 1571 that Manilla was taken, and a capital city founded there. The conquest was effected with little difficulty,

and a force of 280 soldiers, in the short space of six years, firmly established the Spanish supremacy over five of the more important islands. But though it was comparatively easy to subdue the rude and simple pagan inhabitants of the northern islands of the archipelago, the more warlike Mahometan tribes of the southern islands have maintained their independence for three centuries, notwithstanding the repeated efforts of the European invaders to subdue them. Against the Sooloo Islands and the southern part of Mindanao not less than twelve different expeditions have been fitted out at Manilla, the earliest in 1577, the last in 1850. To defeat these tribes in battle and to capture and destroy their strongholds, was not difficult, but their permanent subjugation and religious conversion have hitherto been found impossible, —a remarkable instance of the power of a fanatical religion, aided perhaps by some infusion of Semitic blood.

The Portuguese and the Dutch made some attempts to dispossess the Spaniards, but without success; the only serious danger to the undisputed possession of the archipelago by Spain being the English expedition in 1762, when Manilla was taken, and a heavy ransom exacted; but, after ten months' occupation, the city was restored by the treaty of Paris.

The Chinese form an important part of the population of the Philippines, being the chief merchants and shopkeepers. They had entered the country before the Spanish invasion, and would probably by this time have formed the bulk of the population if they had not been kept down by restrictive laws and successive massacres, the last of which took place in 1819. Their numbers were limited to 6000, but frequently rose to 30,000 or 40,000, when the fear and jealousy of the Spaniards would lead to repressive measures, producing attempts at insurrection on the part of the Chinese, which were invariably suppressed

by the most severe punishment. When, in 1762, they joined the English in their attempt to conquer the country, the governor ordered that all the Chinese in the Philippine Islands should be hanged, and this was said to have been to a large extent carried out. Their numbers at present are not exactly known, but there were said to be only 6000 in 1842. There are, however, a much larger number of mixed blood, the produce of Chinamen and native women, who are now believed to exceed 70,000, so that the influence of the Chinese element in the population is considerable.

The number of Spaniards inhabiting the Philippines is not accurately known, but is estimated at 6000. Many of them are permanent residents, and there is a considerable population of half-breeds. The most important and distinguishing feature of the Spanish rule of the Philippines, as compared with that of the eastern possessions of other European governments, is the extent to which the people have been converted to Christianity, and the gentle influence and authority of the priesthood substituted for the arbitrary rule of their chiefs and the iron shackles of slavery. An approximate equality exists between the resident Europeans and the Christianised natives; and Dr. Jagor is of opinion that it would be difficult to find a colony in which the natives, taken all in all, are better off and more contented than in the Philippine Archipelago.

7. *Government—Population.*

The whole of the Spanish possessions in the Philippines are administered by a Governor-General and a Captain-General; and the 43 provinces are ruled by Governors, Alcaldes, or Commandants, according to their importance, and the peculiarities of their position and inhabitants. The ecclesiastical establishment consists of an

archbishop, three bishops, and 486 priests, having charge of as many parishes. These all speak the language of their parishioners, and live permanently in the country, so that they have no other interest and nothing else to look forward to than the improvement and happiness of the people. The church is supported by revenues derived from extensive landed possessions, and by a small capitation tax on all the Christianised population. The townships and smaller divisions are administered by petty governors and headmen, who are either hereditary or elective.

The revenue is derived from several sources, the most important being a capitation tax on both sexes between the ages of 20 and 60, a tobacco monopoly, an excise on palm-wine, licences for cock-fighting, and custom-duties. Native adults are also subject to a certain amount of labour (either unpaid or at fixed rates) in making and repairing roads and bridges, in keeping up ferries, conveying the mails, and transporting the baggage of the military or of travellers.

The population of the Philippines is only arrived at by the number of those who pay the capitation tax. The last statistics of these, as given by Dr. Meyer (see *Nature*, 1872, vol. vi. p. 162), show that 1,232,544 pay tribute; and the total population is estimated at six times this number, or about $7\frac{1}{2}$ millions. The persons living between the ages of 20 and 60 are usually about half the total population, so that the Christian natives and Chinese would thus amount to only $2\frac{1}{2}$ millions. The persons who are exempt from the tax are Spaniards and their mixed descendants, all foreigners except the Chinese, the petty governors and their families, and a few native families who have been exempted for exceptional services. These can hardly amount to another million, leaving four millions for the unsubdued Mahometan and pagan

natives,—a number that seems greatly over-estimated. It is probable, however, that the 1,232,544 above stated are not the numbers who actually pay tribute, but the number of heads of families who are responsible for it; in which case the larger number given above may be even under the mark. An estimate in the latest consular reports (1876), makes the total population as much as between eight and nine millions.

8. *Trade and Commerce.*

Sugar is extensively grown in Luzon, Panay, Negros, and Zebu, no less than 340,000 acres being under cane-cultivation in Luzon in 1873, while in the other islands, and especially in Negros, the area is greater. The export of sugar in 1876 exceeded in value £2,500,000.

Abaca or Manilla hemp is largely grown and manufactured, especially in the south-east of Luzon and in Samar, Leyte, and Bohol, peculiar conditions of soil and climate being required to produce the fibre. In 1873, in Luzon, 23,700 acres were occupied with this crop, and there were more than ten times this amount in the other islands. In 1876 hemp to the value of over £900,000 was exported.

Coffee is grown chiefly in Luzon and Mindanao, but its cultivation is much neglected. Yet the value of the exports of coffee exceed a quarter of a million sterling.

Tobacco being a government monopoly, is very extensively grown, the larger part in Northern Luzon. The value of the tobacco and cigars exported was £937,780.

Other articles of export in order of importance are sapan-wood, indigo, hides, mother-of-pearl, and gum-mastic. Rice and cotton are grown chiefly for home consumption. Panay and the central parts of Luzon are the best rice districts. The small quantity of gold, iron, and sulphur

which is obtained, seems to be used in the colony, as they do not figure among the exports.

There are no railways, and hardly any good roads, within the Philippines; the rivers are without bridges; and thus the first essentials to the development of the riches of these fertile islands are altogether wanting.

9. *Luzon.*

Luzon is the largest island of the Philippines, and, after Java, the most fertile and populous of the whole Malay Archipelago. It extends from north to south with a curve towards the east, between latitudes 18° 43′ and 12° 10′ north, and has a length of about 420 miles, with a width varying from 30 to 130. It has a very irregular outline, and its area is almost twice as great as that of Ireland. A range of mountains, known as the Caraballos, runs through the whole of it, branching out in different directions so as to give the whole island a mountainous character. To the north of latitude 16° there are two chains, an eastern and western, the former, known as the Sierra Madre, being the most continuous and lofty. The mountains are generally higher near the eastern side, where they form a bold and almost inaccessible shore, exposed to the full force of the north-eastern monsoon and the waves of the Pacific. None of these ranges are very high, Banajao in latitude 14° 2′, which is usually reckoned the highest, being only 6214 English feet above the level of the sea.

In the northern peninsula are two extensive plains: one, the Llano de Dijun or de Cagayan, is situated quite in the north between the two ranges, and is watered by the Tajo or Cagayan river; but the most celebrated is the plain of Pampanga, 90 miles long and 30 wide, not much above the level of the sea, full of lakes, and watered by

numerous rivers, which, during the rainy season, are the means by which an immense quantity of produce is carried to Manilla. The Laguna de Canaren on the highest part of this plain has two rivers flowing from it in opposite directions; one northward to the Gulf of Lingayen, the other south to Manilla Bay.

The rivers of Luzon are almost innumerable, all of any size emptying themselves on the northern or western coasts. The largest is the Aparri, Tajo, or river of Cagayan, which rises on Mount Lagsig in latitude 16° S., and flows northward for nearly 200 miles to the north coast at Port Aparri. It is navigable by small vessels for a considerable distance, but during floods it is dangerous from the quantity of floating timber that drifts down it.

Luzon abounds with lakes, some of great size. The largest is the celebrated Lago de Bay, one side of which is only 10 miles from Manilla, while the other is within ten miles of the eastern coast. It is about 33 miles from east to west, and nearly as much from north to south, but is very irregular, being divided into three deep bays on the north by hilly promontories and by a large island almost forming a continuation of one of them. Its surface is 58 feet above the sea-level, and it is from 90 to 100 feet deep, though shallow in some parts, and in others said to be much deeper. Fifteen rivers and numerous rivulets flow into it, while its overflow escapes by the river Pasig, which falls into the sea near Manilla. Many towns and villages are on its borders; its scenery is beautiful; it abounds with fish; and it is continually traversed by the boats of the natives.

The lake of Taal, a few miles to the south of the last, though 15 miles long and 10 wide, is so surrounded with steep hills as to have the appearance of a huge caldron of water. It is said to be very deep, and from its midst rises a volcanic island about 7 miles across and more than

1600 feet high, the crater of which is so deep that the lake of water at its bottom, itself a mile across, is at the same level as the surface of the lake in which it stands. The whole surface of this island is encrusted with lava, the product of great eruptions in 1716 and 1754. Previous to the former date the island was cultivated, and produced cotton and other crops, but it has since been barren or only partially covered with a coarse jungle grass. The lake produces abundance of fish.

Other lakes are the Laguna de Canaren already mentioned, and the Laguna de Cagayan near the northern extremity of the island. The Pinag de Candava, about 30 miles north-east of Manilla, is a temporary lake formed during the rainy season by the overflowing of the Pampanga river, which then becomes a shallow lake 14 miles long by 7 wide. In the dry season this is turned into a verdant plain of grass with a few permanent pools of water.

The whole island of Luzon is more or less volcanic, and the country around Manilla consists of tufa, which is used as a common building material. Besides the lake-volcano of Taal already described, there are several others in a state of activity. Majajai, on the south of the lake of Bay, is full of hot springs and fumeroles. Balusan, a fine double cone in the extreme south of the island, was thought to be extinct, but has been active since 1852. The Albay or Mayon volcano, situated in 13° 15′ N. latitude, a little north of the seaport of Albay, is the loftiest and most perfect volcanic cone, and perhaps the highest mountain in the Philippines, being, according to Dr. Jagor's barometrical measurement, about 7800 feet high. Vapour continually issues from this mountain, and two great eruptions have occurred within a century, one in 1766, the other in 1814. By the former the town of Malinao was destroyed, and Albay with three others greatly injured ; by the latter Albay was entirely destroyed.

In 1627 one of the highest peaks of Caraballos range, near the northern end of the island, is said to have been entirely swallowed up during an eruption.

The northern parts of Luzon are subject to fierce hurricanes at the change of the monsoons. In 1831, during one of these violent storms, a vessel of 600 tons burthen, which lay in the port of Cavité, was carried on to the ramparts of the fort; and on the 27th of October 1856 there was a terrific typhoon, which is said to have destroyed 10,000 houses in Manilla and the district within a circuit of twenty-four miles. Earthquakes, too, are frequent, and as recently as 1863 one occurred which completely wrecked the capital, destroying or seriously injuring almost all the public buildings.[1]

Manilla is the oldest European town in the east except Goa. It consists of the old fortified city, with narrow streets at right angles to each other and containing all the public buildings, and extensive suburbs containing the mass of the population, with the warehouses, shops, manufactories, and residences of the European inhabitants. The population is about 150,000, and there are ten

[1] The following account of this catastrophe is given by the German traveller Jagor:—

"On the 3d of June 1863, at thirty-one minutes past seven in the evening, after a day of tremendous heat, while all Manilla was busy in its preparations for the festival of Corpus Christi, the ground suddenly rocked to and fro with great violence. The firmest buildings reeled visibly, walls crumbled, and beams snapped in two. The dreadful shock lasted half a minute; but this little interval was enough to change the whole town into a mass of ruins, and to bury alive hundreds of its inhabitants. The cathedral, the government house, the barracks, and all the public buildings of Manilla, were entirely destroyed, and the few private houses which remained standing were seriously damaged. Subsequent examination showed that 46 public and 570 private buildings were thrown down, 28 public and 528 private buildings were nearly destroyed, while all left standing were more or less injured. Four hundred persons were killed, and two thousand injured, and the loss of property was estimated at eight millions of dollars."

British commercial houses and twelve or fourteen of other European countries. Manilla stands almost alone among great commercial cities in having no direct telegraphic connection with Europe, being dependent on a fortnightly mail-steamer to and from Singapore. A small steamer makes a monthly postal cruise from Manilla to the chief ports in the Philippine Archipelago.

The island of Luzon is stated by M'Culloch to contain 2,264,807 inhabitants, but according to recent Spanish estimates of the population of the Philippines, this is far too low a number. Luzon is divided into twenty provinces, and it contains a large number of populous towns of from ten to twenty thousand inhabitants. Manilla, Albay, and Sual are free ports, but only the two first are of any importance.

10. *Mindoro.*

Mindoro, one of the ten larger islands of the Philippine group, lies immediately to the south of the northern part of Luzon, and separated from it by a strait which in the narrowest part is between seven and eight miles wide. The island is of an oval form with a prolongation of the northern portion towards the west, and is about 90 miles long by 50 wide, with an area of about 4000 statute miles. Though only an easy day's sail from Manilla, this island is one of the least populous of the archipelago, being extremely mountainous, covered with dense forests, and in the more level parts near the coast full of marshes and very unhealthy. The inhabitants of the coasts are Tagals, but in the interior there is a low tribe of Malayan race, probably the indigenes of the island and called Manguianos, speaking a peculiar language and living in a very miserable manner on the products of a rude agriculture. There are also said to be some Negritos, but of these very little is known.

There are no active volcanoes in Mindoro, and nothing is known of its geological structure. In the north-west a valley crosses the island from Abra de Ylo to Mamburao, along which there is a road which can be traversed in the dry season, but is so flooded during the rains as to be impassable. In the north-east is a lake about five miles across, which lies in a depression behind the coast-range between the towns of Nanjan and Pola. The floods of the wet season leave an annual deposit of mud in this valley, which raises its level so rapidly that the church of the old town of Nanjan, situated near the lake, became buried in the course of fifteen years to the top of the arch of the door, and the town had to be removed to near the sea.

Mindoro consitutes one of the provinces of the Philippines under an alcalde. The chief town is Calapan on the north coast; and there are nine other pueblos or villages, with curés and native chiefs, all situated round the coast. The population is about 30,000, of whom 6000 are wild tribes in the interior.

11. *Panay.*

This island is situated to the south-east of Mindoro, and is about one-fifth larger. It is of an irregular quadrangular shape, wider at the north than the south, and with three projecting angles, that at the south-east being rounded off, but here the island of Guimaras, separated by a very narrow strait, appears to have once formed another projection. A chain of mountains runs in a curved line from the north-western to the southern promontory, and from the centre of this another chain branches off to the north-eastern promontory, thus dividing the island into three natural districts, which form the provinces of Antique, Capis, and Iloilo.

Panay is exceedingly fertile, being well irrigated by numerous mountain streams; and it supports a large population of Bisayas, with a few Negritos in the mountains. It produces rice in abundance, sugar, cotton, coffee, tobacco pepper, and cacao. Ebony and sapan-wood are obtained from the forests, while pearl-shells, tortoise-shell, and tripang are found on its coasts. It is the most densely peopled and highly cultivated island of the group, having over 860,000 inhabitants. It has three large towns—Buenavista, Capis, and Iloilo, the latter a free port, and a place of very large trade—and seventy-four villages. Each of the provinces of Panay is under the administration of a governor. There are no volcanoes in the island.

12. *Negros.*

Negros lies to the south-east of Panay, from which it is separated by a strait about 15 miles wide. It is 130 miles long, with an average width of 24 miles, and is shaped something like Italy. It has an area of about 3800 square miles, or considerably less than Mindoro. Its coast is comparatively little broken by bays or inlets, and it contains no good harbours. A central chain of mountains runs through its entire length, and it has only small rivers, unfit for navigation.

It has 145,000 inhabitants, who are chiefly Bisayas; and in the mountains are a considerable number of Negritos, from whose abundance the island first received its name. The chief products are sugar, rice, cotton, and abaca, or Manilla hemp. The mountains contain deer, wild pigs, and monkeys. The island is ruled by a governor. It has only one town, Himamaylan on the west coast, and thirty-one villages. The want of harbours and navigable rivers is not favourable to trade, but sugar is now largely cultivated, and many sugar manufactories

have been established by Europeans, which has led to a considerable increase of the population in the last twenty years.

13. *Cebu.*

Cebu or Zebu is another long and narrow island to the east of Negros, from which it is separated by a strait about 15 miles wide and more than 100 miles long. The island is 135 miles long, with an extreme width of 30 miles, narrowing to a point at both extremities. Several chains of mountains of no great height traverse it from north to south, and the rivers, though small, are numerous. Little is known of its geology, except that it has no volcanoes, and that it produces some gold and coal. Its inhabitants are Bisayas, and it has no wild tribes either Malay or Negrito. The only deep inlet on the coast is that of Badian on the south-west, which is protected by a small island, and forms a good harbour. On the east the island of Magtan, 10 miles long, forms the harbour of Cebu, the oldest Spanish settlement on the Philippines, and now a port and a place of considerable trade. The city of Cebu is picturesquely situated, and has a fine cathedral and several handsome churches. The population of the island, which now amounts to about 320,000, has greatly increased of late years, owing to the spread of sugar cultivation and the growth and manufacture of abaca, which are the chief industries. Cebu forms a province under the administration of a governor, and has forty-four villages, all situated round the coasts or a few miles inland.

14. *Samar.*

Samar is the most easterly of the Philippines, and is one of the larger islands, being about equal in size to Panay. It is of the form of an oblique triangle with the

base to the north and the apex to the south; and is separated from Luzon by the straits of San Bernardino, and from Leyte by the narrow winding strait of San Juanico. It is very mountainous, and the interior is mostly covered with forests and only inhabited by a few scattered Negritos. The mountains lie mostly in a north and south direction, but with numerous diverging spurs; and there is abundance of rivers which penetrate far into the interior. The largest is the Loquilocun, which at one part of its course comes within 12 miles of Paranas on the west coast, and then flows north-eastward to the Pacific at Bubasan. For a distance of about 20 miles above its mouth, it flows along a flat, inundated valley, above which it is a continued succession of rapids and cataracts, but is traversed throughout by small canoes. The population of Samar is 147,000, all Bisayas. It is a province under a governor, the capital being Catbalogan, sometimes called Samar, on the west coast, a town of 6000 inhabitants; and there are twenty-eight villages, none of which are more than ten miles from the coast.

15. *Leyte.*

Leyte lies west and south of Samar, from which it is separated by the narrow Juanico Straits, while its southern end approaches the north-eastern extension of Mindanao. It is more than 100 miles long, with an average width of 30 miles, and is mostly of a regular outline, except at the north-western corner, where are two great promontories. Its area is about equal to that of Mindoro. Its surface is generally hilly, and a chain of mountains runs along it near the western side, with diverging ranges in the north-west. It is generally of volcanic formation, and there are many extinct craters, from some of which sulphur is obtained in large quantities. Gold and iron ore are said

to be found in the island, indicating the presence of crystalline and sedimentary formations. The east coast is said to be rising, while the west is being destroyed by the sea, which at Orinog has advanced fifty yards in six years. The rivers are all small and not navigable. There are two lakes—Jarnaran, in the north-west, and Bito, near the east coast; but both are small, not exceeding a mile long by about half a mile wide, although represented on maps as much larger. The former is in an old crater, and has acid water. The inhabitants of Leyte are Bisayans, exactly like those of Samar, and are said by Jagor to be more idle and dirty than the Tagalas of Luzon, though friendly and tractable, crime being almost unknown. The whole of the interior is forest, the settlements being on or near the coast. The capital town is Tacloban at the southern entrance to the Juanico Strait, which has been declared a free port, but is as yet a place of no trade. There are twenty-eight villages in Leyte, almost all near the coast, and its population amounts to about 170,000.

16. *Masbate—Bohol.*

The comparatively small island of Masbate is situated between Luzon and Panay. It is about 80 miles long, of an irregular figure, and with an area of about 1200 square miles. A crescent-shaped mountain chain runs through it, probably of ancient crystalline rocks, as the river sands produce a considerable quantity of gold. It is sterile and little cultivated, its population being only about 10,000. The inhabitants are all Bisayas. It has only nine villages, and no town.

Bohol, situated between Cebu and Leyte, is a little smaller than Masbate, but of a more compact form. It is hilly and volcanic, with abundant streams and a fertile soil, and supports a population of nearly 200,000, the chief products being abaca, cotton, and tobacco.

17. *Palawan.*

Palawan is a long narrow island running in a north-east and south-west direction, and, with the Calamines at the north end and Balabac at the south, almost serving to connect the Philippines with Borneo. It has a length of about 230 miles, and a breadth varying from 10 to 25 miles, and has probably an area of about 5000 square miles, being thus the third in size of the Philippine Islands. Its northern extremity is much broken and studded with small islands, so as to form several good harbours, while its whole north-western coast is bordered by an extensive submarine bank with numerous reefs and islets.

The land is generally high, and towards the north the coast is formed by vertical limestone cliffs, probably raised coral reefs; and no part of it, so far as yet known, is volcanic. It is mostly covered with forests, which produce abundance of rattans and beeswax, together with a camphor-tree similar to that of Borneo. Among its wild animals are monkeys, deer, pigs, civets, a porcupine, flying squirrel, and small leopard; the last three not found in any other Philippine island, and showing a connection with Borneo. Some recent collections of birds from Palawan show this connection still more clearly, for while the mass of the species are allied to those of the Philippines, there are a considerable number either allied to or identical with those of Borneo. The near approach of the two islands sufficiently accounts for this amount of similarity, without supposing there to have been any actual land connection between them.

The inhabitants of Palawan are very little known. They are said to be of Malayan race, but with more or less frizzled hair, perhaps an indication of mixture with Negritos or with Papuan slaves. They use the blow-

pipe, and some of them are connected with the Milanows of Borneo, and are under the nominal rule of the Sultan of Bruni, while others are under the Sultan of Sooloo. North of latitude 10° 20′ N., Palawan has been colonised from the Philippines, and with the Calamianes and the island of Dumaran forms the province of Calamianes, the capital of which is Taitay on the north-eastern extremity of Palawan. The population of this province is about 18,000.

18. *Mindanao.*

Mindanao or Mindano, sometimes also called Magindano, is the most southerly island of the Philippines, and, next to Luzon, the largest. Its general form is a very irregular triangle, with straggling appendages at each angle. The coast-line is very uneven, and is often indented with deep bays and inlets, those of Iligan on the north and Illana or Lanun on the south, leaving an isthmus between them little more than 30 miles wide. The length of the island from east to west is about 280 statute miles, and the width from north to south about 270, its area being about 40,000 square miles. It is generally mountainous, with extensive plains and valleys, and on the eastern side it has two active volcanoes, but hardly anything is known of the interior. It is drained chiefly by two rivers, the Rio Grande de Mindanao, which enters the sea by an extensive delta at Cota Batu in the southern part of Illana bay, and which drains an extensive plain with several large lakes; and the river of Butuan, whose mouth is in Butuan bay on the north, while it rises near Mount Calalan and within about ten or twelve miles of the head of Davao bay on the south. There is supposed to be a large lake called Maguindanao in the centre of the island which communicates with one or both of these rivers, and to the south of it two others

named Balsan and Liguasin. Lake Sapongan is in the northern peninsula, and Lake Malanao to the south of Iligan bay, but all these appear to be inserted in maps on the authority of native reports, and, though they probably exist, their position, size, and characteristic features are quite unknown.

The whole island of Mindanao being less than ten degrees from the equator, it is removed from the influence of the monsoons, and from the terrible hurricanes which accompany them. Its climate is therefore more equable and humid than that of Luzon, and its vegetable productions probably differ considerably from those of the more northern islands. Nothing, however, is known of the botany of this island except that the teak tree occurs here, the only other islands in the entire Malay Archipelago in which it is found being Java and Sumbawa. The celebrated Malayan fruits, the mangosteen and durian, are said to flourish here, but not farther north.

The animals of Mindanao appear to correspond generally with those of the other Philippine Islands, but it probably contains some peculiar forms, as more than twenty new kinds of birds have been discovered, although only a few points on the coast have yet been visited.

The inhabitants consist of Bisayas on the north coast, but the interior is occupied by wild races, and the south and east by Mahometan Malay tribes who have long been celebrated as pirates. These people have their headquarters in Illana bay, whence they annually sally forth to ravage the adjacent coasts and islands, sometimes extending their excursions to the whole coast of Borneo, to the Moluccas, and even to the Aru Islands. The Spaniards occupy a considerable portion of the coasts, especially on the north and south, of which they have formed five districts. The largest and most populous is Misamis, extending along the north coast between E.

long. 123° and 154° 30′, the chief town, also called Misamis, being situated in a deep inlet of Iligan bay forming a secure harbour. It has fourteen villages and 64,000 inhabitants. East of this is Surigao, occupying the whole northern peninsula, at the extremity of which is the chief town of the same name. This district has twelve villages and 25,000 inhabitants. Davao on the south is a small settlement with only 1600 inhabitants. Cota Batu or Selangan, formerly called Mindano, has only 1200. Zamboanga, on the extremity of the southern peninsula, is of small extent, having two villages and about 12,000 inhabitants, and it includes the island of Basilan, on which there is a fort. The port of Zamboanga is of some commercial importance, and also as a station from which to check the piracy of the surrounding tribes.

19. *The Sooloo Islands.*

The Sooloo or Sulu Archipelago is a group of islands, said to be more than 150 in number, extending between Cape Nusang at the eastern extremity of Borneo, and the western peninsula of Mindanao. Besides Basilan, now belonging to the Philippines, there are two good-sized islands, Sooloo in the centre, and Tawi-Tawi near Borneo. These islands are beautiful and fertile. Sooloo is mountainous and well wooded, about 40 miles long, and from 5 to 12 miles wide. It has teak trees like Mindanao, and is said to produce iron and gold. Deer and wild pigs are plentiful, and the elephant is said to have been wild within the present century. The inhabitants are all Mahometans of Malay race, speaking a peculiar language, which they write in the Arabic character. They are considerably advanced in civilisation, cultivating rice and rearing the buffalo, ox, goat, and horse, and even amusing themselves with horse-races. They are ruled over

A PIRATICAL FLEET.

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by a Sultan, who claims sovereignty over part of Western Borneo and the island of Caygayan Sooloo; but these countries are really in the hands of native Malay or Arab chiefs, and the Sultan is powerless even to enforce tribute from them. The small islands of Tonquil and Balanguini, south of Basilan, were long the haunts of desperate pirates, who were destroyed or driven out in 1848, and the islands taken by the Spaniards. Many pirates, however, escaped, and still carry on their former practices from other of the Sooloo islands or from the coast of Borneo. Sooloo itself is claimed as tributary by the Spaniards; and in 1851 they destroyed the capital town, since when the Sultan has resided inland, still maintaining his independence.

The Sooloo islands produce many valuable articles of commerce, among which are tortoise-shell, tripang, edible bird's nests, pearls, and pearl-shells. They are also a great mart for slaves, the piratical expeditions having for centuries brought captives from every part of the archipelago; so that here are to be found pure Malays from Sumatra, and Papuans from New Guinea, and even natives of Siam on the north, and of Java and Timor on the south. These slaves are bartered with traders, and thus find their way to remote islands, and must have helped to produce those mixtures of various races which often render it difficult for the anthropologist to determine the affinities of many of the so-called Malay peoples.

The pirates of Sooloo and the Lanuns of Magindano have long been a terrible scourge to the eastern seas. Many European vessels have been captured by them, and their crews either murdered or made slaves of; and Mr. St. John (many years British consul in Borneo) is of opinion, that a large proportion of the vessels lost or missing in the archipelago have suffered this fate. The piratical fleets used often to consist of twenty or thirty

large boats, with 80 or 100 men each, and even the largest merchant vessels had not the least chance against them. The constant efforts of the Spaniards and Dutch, and of Sir James Brooke, have extirpated some of them, and the prevalence of steamers has led them to use smaller boats; but they are still a terror to native vessels and to many unprotected coasts, and their continued existence is a serious injury as well as a disgrace to all the European governments who have possessions in the Eastern seas.

THE MALAY ARCHIPELAGO.

CHAPTER XV.

THE DUTCH EAST INDIES.

1. *Extent and Importance.*

ALMOST all the groups south of the Philippines—extending from Pulo Nias on the west of Sumatra to the Aru Islands near New Guinea, a distance of 2500 miles—are comprised in the Dutch Colonies, forming altogether a state more than thrice the size of Germany, with a population of 22,000,000; abounding in gold, diamonds, pearls, coal, and salt, and producing pepper, cinnamon, tea, coffee, rice, tobacco, indigo, camphor, and spices. Thus, these Dutch possessions rank next in importance to the British Empire in Asia; its trade with the home country amounts to at least one-half of that carried on between East India and England, while the floating capital of this trade can scarcely be estimated at less than £25,000,000.

2. *Dutch Policy, and its Effects on the Native Populations.*

The army, and the policy pursued towards the natives, are the two mainstays of the Dutch power in these remote regions. The army, amounting to about 30,000 men, is administered by the Indian Council of six members, and about two-fifths of all the forces are stationed in Java, the heart of Netherlands India. They consist both of Dutch and Malays, drilled and officered by Europeans. The fleet consists of about thirty vessels, and these combined forces have gradually overcome all resistance as far as

they could reach; so that the Dutch authority is firmly established, especially in Java, where one or two nominally independent sultans are mere tools in the hands of the authorities in Batavia.

The Dutch government has a monopoly of rice, indigo, and coffee, to such an extent that native planters are obliged to dispose of their produce to the State on fixed terms. By this system a large revenue is obtained, the coffee produced in Java alone amounting yearly to more than 62,000 tons. Slaves are no longer employed on the plantations, slavery having been abolished some few years ago. But the natives are bound to a sort of statute labour, besides their obligation to serve their own sultans in the same way. Many of the hardships inherent to this system have been mitigated, but it still remains substantially true that the Dutch colonies are farmed for the benefit of the mother country. The natives feel the yoke, but endure it patiently; partly through obsequiousness to their sultans, who are so many Dutch puppets, partly through their own natural temperament. The Malays have, no doubt, some good qualities, but at the bottom of their character lies a material and sensuous element; for them the *panem et circenses* argument has irresistible attractions; they are satisfied with their rice, fish, and betel, which they easily earn as careful agriculturists and skilful mariners. If to these blessings be added an occasional exhibition of dancing girls, concert, visit to the play-house or cock-fight, they are more than rewarded, and think no longer of revolting. The natives even thrive under the system, as shown by the enormous increase of the population. That of Madura, for instance, rose from 393,426 in 1856 to 676,818 in 1871, thus almost doubling itself in fifteen years. It will also be readily allowed that the condition of affairs in the districts under Dutch rule is far superior to that of the native states,

where the old barbarous systems of slavery, piracy, and spoliation still flourish unrestrained.

3. *System of Government of Netherlands India.*

At the head of the Dutch East Indies is a Governor-General with the authority of a viceroy. He is supreme commander of the land and sea forces, with the right of declaring peace and war, and concluding treaties with the native princes and peoples within the limits of his instructions from the Home Government. The colonies are divided into two main divisions, the first comprising Java with Madura, the second the so-called external possessions (Buitenbezittingen), that is, all the other possessions and tributary states. The former are divided into "Residencies," of which there are twenty-one in Java alone. Each of these provinces is administered by a "resident," and is again subdivided into a number of "regencies," with a "regent" at their head. This regent is always a native chosen from the nobles, especially of former dynastic families, whose influence over their subjects, cemented as it is by religious associations, still remains undiminished. Under the regent are the district and "dessa" chiefs, charged with the collection of the taxes, who are chosen by the inhabitants, and who represent the interests of the "dessa" or commune, a social organisation somewhat resembling the Russian "mir." With the regent, called by the Javanese "adhipatti," "pangeren," or "tommonggung," is associated a European "Assistant Resident," who is instructed to treat his compeer as a younger brother, and while keeping him well in hand to put him forward as ostensibly the real agent. Under the Assistant Residents are other European functionaries, who, besides their political duties, have the administration of justice or the superintendence of the culture-system mainly in their hands.

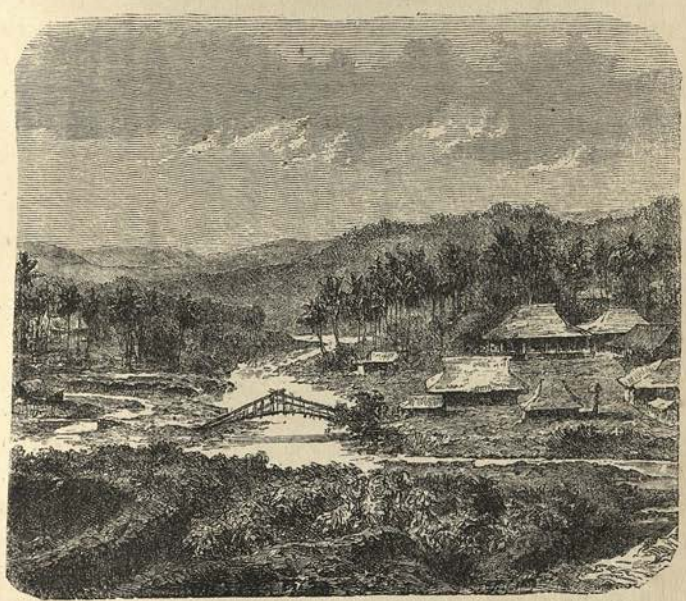
CHAPTER XVI.

JAVA.

1. *Position, Form, and Area.*

CHIEF of the Dutch possessions is the fine island of Java, situated on the southern margin of the great Asiatic submarine plateau. It is separated from Sumatra on the west by the Straits of Sunda, at the narrowest part only fourteen miles wide, and from Bali on the east by a strait only two miles broad. Borneo lies immediately north of it, but everywhere distant more than 200 miles, while due south of it the Indian and Southern oceans extend uninterruptedly to the Antarctic continent. In form it is long and comparatively narrow, lying in a nearly east and west direction. Its extreme length is 575 geographical miles, while its breadth varies from 48 to 117 miles. Its area has been computed at 37,029 geographical miles, or about one third part larger than Ireland. Its north coast is somewhat low, and comparatively sheltered, and here are several small islands, the chief being the Karimon Java archipelago, and Bawean; and one large island Madura, which at its western extremity is only separated from the main island by a strait a mile wide. The southern coast is bold and precipitous, and has only a few islands situated close to the shore; the most important being Barong towards the eastern extremity, and Kambangan a little west of the centre. The coast-line presents many bays on the north, but none of them penetrate deeply, so that there is only one good harbour, that

of Sourabaya, formed between the main island and Madura. The southern coast is still less indented, and is exposed to a heavy and dangerous surf, which rolls in upon the shore at all seasons. It is therefore little frequented, and it has hardly any safe harbour but that between the island of Kambangan and the mainland.



JAVANESE LANDSCAPE.

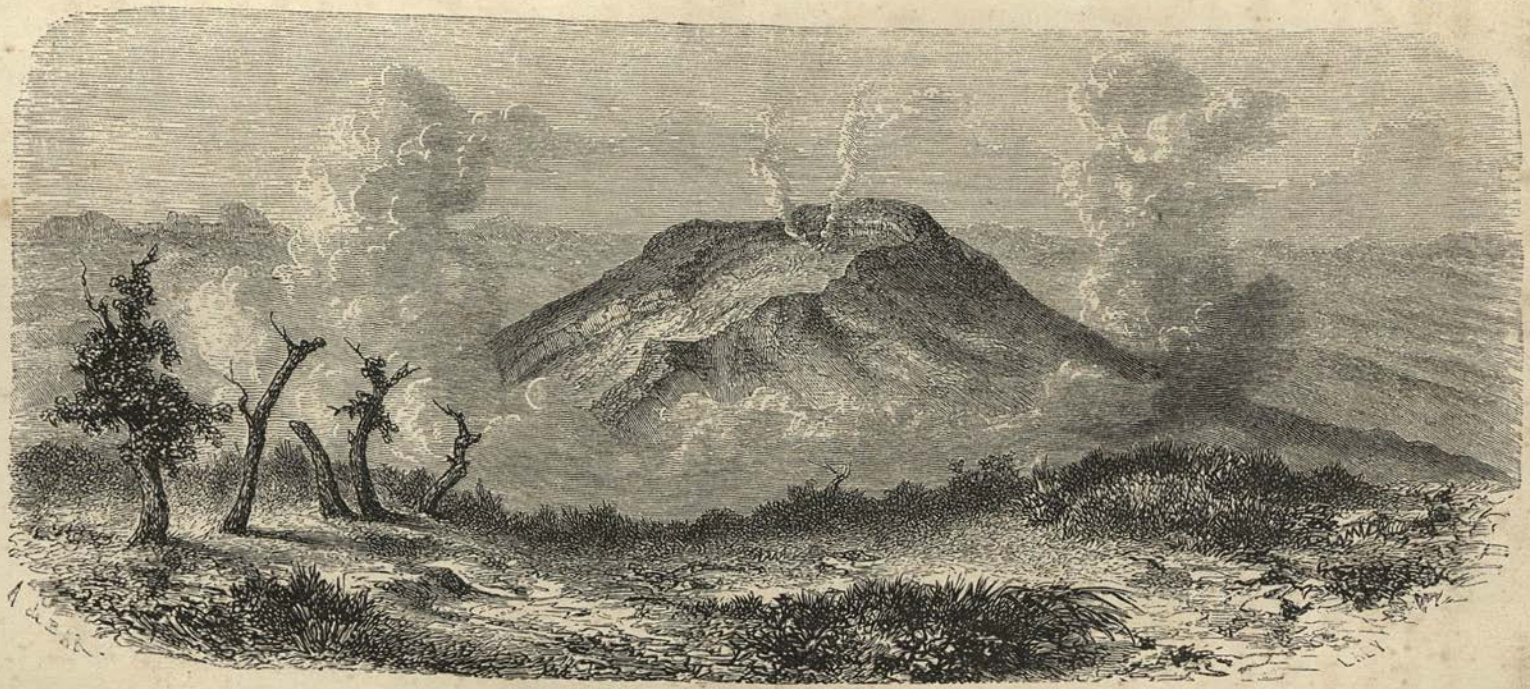
The western part of Java, as far as Cheribon, is from 75 to 95 miles broad, and, except the plains on the northern coast, is very mountainous, the mountains being crowded together with narrow intervening valleys, but not reaching such great elevations as elsewhere; the highest being somewhat under 10,000 feet. This, however, is the most luxuriant part of the island, owing to the moister climate,

so that the forests reach the summits of some of the highest mountains. Here is the country of the Sundanese, who speak a language distinct from the Javanese proper. Eastward as far as the promontory of Japara the island is hardly more than 50 miles wide, mountainous in the centre, but with plains both on the north and south coasts. Here the mountains exceed 10,000 feet. Then comes a portion which is about 100 miles wide, as far as Sourabaya, where an extensive valley nearly crosses the island. Beyond this the eastern end is only 50 miles wide, yet it contains the great mountain of Semiru, 12,235 feet high, and the highest in all Java.

2. *Mountains—Volcanoes—Earthquakes.*

The great mountains of Java are all volcanic cones, situated for the most part near the central line of the island. Eight of these exceed 10,000 feet, seven more exceed 9000, and eight are between 7000 and 9000 feet high, and there are many others of less elevation. The total number of volcanic peaks in Java is said to be 46, of which twenty are more or less in a state of activity. As an example of these, we may quote Dr. Horsfield's account of the Tenger mountain situated in the eastern part of the island, which, although by no means the most lofty, is one of the most interesting, not only in Java, but in the world.

"This mountain constitutes one of the most remarkable volcanoes of the island. It rises from a very large base, in a gentle slope, with gradually extending ridges. The summit, seen from a distance, is less conical than most of the other principal volcanoes, varying in height, at different points, from 7000 to 8700 feet. The crater is not at the summit, but more than 1000 feet below the highest point; and consists of a large excavation of an irregularly



VOLCANO IN JAVA.

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circular form, surrounded on all sides by a range of hills of different elevations. It is by far the largest crater in the island, and perhaps exceeds every other crater on the globe. It constitutes an immense gulf, the bottom of which is level. This is bare and covered with sand throughout; in one portion, near the middle, the sand is loose and blown by the wind into ridges, and to this the natives give the name of 'sea of sand.' The larger diameter of the crater is about four miles and a half, the smaller three and a half. From its interior, and towards the middle, there rise several conical peaks, or distinct volcanoes. The chief of these, the mountain Brama (from the Hindu god Brama, whose emblem is Five), is a perfectly regular cone, still in partial activity, with occasional eruptions. It is surrounded on all sides by the 'sea of sand' above mentioned. Adjoining to it stands another conical peak, more than 1000 feet high, named 'Watangan' (Hall of Audience), covered externally with sand, quite bare, and on account of its steepness its top has never been examined. At a small distance from the 'Brama' rises a smaller cone, called 'Butak' (the Bald). The two last have not exhibited any volcanic activity in recent times.

"The 'Brama,' which rises from the middle of the crater's floor, is also covered with sand, and is marked with regular parallel grooves and ridges, its height being above 600 feet. The ascent, though arduous, is facilitated by steps which the natives have made in the sandy covering. On reaching the summit, I was surprised by finding myself suddenly at the brink of an immense funnel, having a circumference of about one mile, and a depth of about 600 feet. Its form is, on the whole, regular; the interior walls are stratified with undulating layers of sand, and volcanic débris of different colours—grey, reddish, and black. The sides converge to a small

bottom, apparently about twenty yards in diameter, containing a greenish fluid, from which volumes of smoke ascend. While standing at the brink, several outbursts occurred, which shook the mountain, and were accompanied by a rumbling noise resembling distant thunder."

The outer walls of this old mountain are of trachytic lava, and Dr. Junghun believes that in the earlier periods of its history it sent forth trachytic lavas, obsidian, and pumice stone; after this enormous quantities of sand were thrown out, which formed the great sandy floor with its sand cones, while at present it only emits steam and sulphurous gases, with occasional showers of fine ashes. Some of the other volcanoes of Java have had terrible eruptions within the historical period. In the year 1772 the volcano Papandayang, which is in the south-western part of the island, threw out such an immense quantity of scoriæ and ashes that Dr. Junghun thinks a layer nearly fifty feet thick was spread over an area having a radius of seven miles, all this being thrown out during a single night. Forty native villages were buried beneath it, and about 3000 persons are supposed to have perished between this single sunset and sunrise.

Still more terrible and destructive was the eruption of Mount Galunggong (a few miles north-east of Papandayang) on the 8th of October 1822. At noon on that day not a cloud could be seen in the sky. The wild beasts gladly sought the friendly shades of the dense forest; and not a sound was to be heard over the highly-cultivated declivities of the mountain, or over the rich adjoining plain, but the dull creaking of some native cart drawn by the sluggish buffalo. The natives, under the shelter of their rude huts, were giving themselves up to the mid-day repose, when suddenly a frightful thundering was heard in the earth, and from the top of this old volcano a dark dense mass was seen rising higher and higher into the

air, and spreading itself out over the clear sky with such an appalling rapidity that in a few moments the whole landscape was shrouded in the darkness of night. Through the thick darkness flashes of lightning gleamed incessantly in every direction, and many natives were instantly struck down to the earth by stones falling from the sky. Then a deluge of hot water and flowing mud shot up from the crater like a waterspout, and poured down the mountain-sides, sweeping away trees and beasts and human bodies in its seething mass. At the same moment stones and ashes and sand were projected to an enormous height into the air, and, as they fell, destroyed nearly everything within a radius of twenty miles, while quantities of the same material fell even beyond the river Tandoi, which is forty miles off. A few villages that were situated on high hills on the lower declivities of the mountain escaped the surrounding destruction by being raised above the streams of hot water and flowing mud, while most of the stones and ashes and sand that were thrown out, passed completely over them, and destroyed villages that were farther removed from the centre of this great eruption.

The thundering was first heard at half-past one o'clock. At four o'clock the extreme violence of the eruption was past: at five, the sky began to grow clear once more, and the same sun that at noon had shed his glowing light over the rich and peaceful landscape, at evening was casting his rays over the same spots, then changed into a scene of utter desolation.

But this was not all. A second eruption followed on October 12th, even more violent than the first. Hot water and mud were again vomited forth, and great blocks of basalt were thrown to a distance of seven miles from the volcano. There was at the same time a violent earthquake; the summit of the mountain was broken down, and one side, which had been covered with forest, became

an enormous semicircular gulf. New hills and valleys are said to have been formed, and two rivers had their courses changed. The river Wulna bore down to the sea the dead bodies of men and the carcases of deer, rhinoceroses, tigers, and other animals. The official accounts state that 114 villages were destroyed, and 4000 persons killed. This mountain was situated in a fertile and thickly populated part of Java; it was covered with forests to the summit, and no record or tradition existed of its ever having been in a state of eruption; so that this terrible catastrophe fell upon a people utterly unprepared for it.

Java is also subject to earthquakes, though not so frequent or so violent as in some other parts of the archipelago. The most celebrated is that of January 5, 1699, when 208 considerable shocks were felt and many houses in Batavia were overturned. At the same time a volcanic eruption occurred in Mount Salak, about forty miles south of the city, and numerous landslips blocked up the river, causing it to become so muddy as to kill all the fish except the carp. The quantity of bushes, trees, and débris, caused the river to overflow and inundate the city, while it brought down numbers of drowned buffaloes, tigers, rhinoceroses, apes, and other wild beasts, including even crocodiles, which were found drowned among the rest.

So lately as 1867 a violent earthquake occurred in central Java, which destroyed many houses and swallowed up their inhabitants. A thousand people are said to have been killed by it in the native capital of Djokokarta alone.

Besides the true volcanoes, there are many hill ranges and lesser mountains in Java; and skirting the southern shore there is a great range of low mountains about 3000 feet in height, formed of basalt, trap, and sometimes of limestone. This latter appears to be of Miocene age, as it contains shells and corals allied to those of the European Miocene, as well as others similar

to those which now live in Eastern seas, three out of twenty-two being living species. In the western part, near Sumatra, a few boulders of granite are found, but this rock is otherwise hardly known in the island.

3. *Rivers, Valleys, Hot Springs, etc.*

The rivers of Java, especially on the north side, are almost innumerable, but from the form of the island they are of comparatively small size, and a few only navigable for boats. Their rapid flow and perennial supply of water are excellently adapted for irrigation, to the practice of which much of the fertility of the country is due. The largest and most useful river of the island is that usually called the river of Solo, from its passing the native capital of that name. It has its source in one of the low ranges of hills towards the southern side of the island, and after a tortuous course of 350 miles empties itself into the sea by two mouths opposite the western end of Madura. Except for three months, from August to October, it is navigable for large boats, and at all times by small ones. The next largest river is the Brantas, or river of Sourabaya. This also rises near the southern coast, on the west side of the Semero mountain, and after receiving many affluents, enters the sea by two mouths, one of which passes the town of Sourabaya, and contributes to form its harbour.

The valleys of Java, like its streams, are innumerable, but its inland plains of any extent are only six in number. In the western section of the island is that of Bandong; in the centre the great plain of Surakarta; and somewhat farther east those of Madiyun, Kediri, and Malang, the latter being situated between the great volcanoes of Arjuna and Semero. All these plains are bounded by lofty mountains, which furnish them with a

perennial supply of water for irrigation, such as is furnished by the Alps to the plains of Lombardy. The valley of Kadu, south of Samarang, and bounded by the mountains Sundara and Merapi, is of equal fertility with the above-mentioned plains. There are no lakes of any extent in Java, but there are a few small ones in the mountains, which are often very beautiful. Hot springs are frequent, generally at the base of the volcanoes, and many of them are strongly impregnated with carbonic acid. The mud and brine springs of Grobogan, in the south of the province of Japara, are very remarkable. They are situated in a level limestone district surrounded by volcanoes, and have been described by Dr. Horsfield as follows:—

"These wells are dispersed through a district of country several miles in circumference, the base of which, like that of other parts of the island which furnish mineral and saline waters, is limestone. They are very numerous, and force themselves upwards through apertures in the rocks with some violence and ebullition. The waters are strongly impregnated with sea-salt, and yield upon evaporation very good salt for culinary purposes, in quantity not less than 200 tons a year. About the centre of this limestone district is found an extraordinary volcanic phenomenon. On approaching it from a distance, it is first discovered by large volumes of smoke rising and disappearing at intervals of a few seconds, resembling the vapours arising from a violent surf, while a dull noise is heard like that of distant thunder. Having advanced so near that the vision is no longer impeded by the smoke, a large hemispherical mass is observed, consisting of black earth mixed with water, about 16 feet in diameter, rising to the height of 20 or 30 feet in a perfectly regular manner, and, as it were, pushed up by a force beneath, which suddenly explodes

with a dull noise, and scatters about a volume of black mud in every direction. After an interval of a few seconds, the hemispherical body of mud or earth rises and explodes again. In the same manner this volcanic ebullition goes on without interruption, throwing up a globular body of mud, and dispersing it with violence through the neighbouring plain. The spot where this occurs is nearly circular, and perfectly level. It is covered with the earthy particles impregnated with salt which are thrown up from below. Its circumference is about half a mile. A strong sulphurous pungent smell, somewhat resembling that of earth-oil, is perceived on standing near the explosion, and the mud recently thrown up is somewhat above the heat of the air. During the rainy season these explosions are more violent, the mud is thrown up much higher, and the noise is heard to a greater distance."

The celebrated valley of poison, "Gueva upas," is an extinct crater about half a mile in circumference, which is an object of terror to the inhabitants of the country. Every living thing which penetrates into this valley falls down dead, and the bottom is covered with bones and carcases of tigers, deer, birds, and even of men, all killed by the copious emanations of carbonic acid gas, which, accumulating in the hollow, form an invisible but deadly lake. In another crater, near the volcano of Talaga Bodas, there are sulphurous exhalations, which have killed tigers, birds, and innumerable insects, and in this case the soft parts, such as muscle, nails, hair, and skin, are preserved, while the bones are corroded and destroyed. The mythical tales of the deadly "Upas tree," which was said to destroy all creatures which slept beneath its shade, or any birds which flew over it, have originated in the word "upas" (poison) being applied to these places and also to a poisonous tree—the *Antiaris toxicaria*—which latter

has no such deadly properties as have been alleged, but which have been transferred to it from the craters filled with mephitic gases, to which they really appertain.

An analogous phenomenon is a lake a quarter of a mile long, in the crater of Taschem, in the eastern part of Java, which is so strongly impregnated with sulphuric acid that no fish can live in it, or in the river which flows from it; and when the river empties itself into the sea, it destroys or drives away all fish for a considerable distance.

4. *Climate.*

The climate of Java is hot and uniform, as might be expected from its geographical position, but its elevated plains and plateaus, from 1000 to 5000 feet above the sea, afford a variety of climates, some of which are as near perfection as any that can be found. The wet season is from October to March, when the north-west monsoon blows, and the dry from April to September, during the prevalence of the south-east winds; but, as in all countries near the equator, rain and sunshine are more or less distributed throughout the year. The period of change of the monsoons is often unsettled and tempestuous, with violent thunderstorms, which, in the mountains, are often destructive of life. Land and sea breezes are experienced within fifteen miles of the northern and southern coasts, while in some parts of the east end of the island the south-east monsoon blows violently across the entire island.

The variations of temperature at Batavia are very small; the result of hourly observations for three years at the Government meteorological observatory showing an extreme range of only 27° Fahr. in that period. The usual daily range, however, is only about 11°, or from about 74° to 85°; and during the whole year the tem-

perature seldom falls much below 70°, or rises above 90°. At elevations of from 3000 to 5000 feet above the sea the thermometer is usually 20° lower than the figures above given, producing a climate very agreeable to European constitutions, and suitable to the corn, fruits, flowers, and vegetables of the temperate zone, which have long been acclimatised.

5. *Natural History of Java.*

The botany of Java is exceedingly rich and diversified, and the peculiar Malayan flora is here developed in its highest luxuriance and beauty. The villages, and even the towns, are in great part concealed from view by the luxuriant abundance and perpetual verdure of the vegetation. Patches of sandy shore, or of bare lava-coloured peaks, are the exception. The vegetation varies with the soil, whether composed of the débris of volcanic matter, of calcareous rocks, or of sandstone; but it varies far more according to the elevation of the land, which gives rise to at least six different botanical zones, which are thus described by Dr. Blecker:—"On the low coast-lands we find superb palms, bananas, aroids, amaranthaceæ, papilionaceous plants, and poisonous Euphorbiaceæ. Scarcely do we ascend 1000 feet above the sea when our eyes are struck by the quantity of ferns, which already preponderate over other plants, and here, too, we find magnificent groves of slender bamboos. The farther we ascend, the greater is the change in the aspect of the vegetation. Palms and leguminosæ become rare, and bamboos less abundant. In place of these we find forests of fig-trees with their tall trunks, spreading branches, and thick foliage, overshadowing more lowly trees and a variety of humble plants, and exhibiting a majesty which even surpasses in splendour the palms of the coast. Here, too, the ferns increase in number,

and beautiful tree-ferns abound, often covering the sides of the valleys with their aerial crowns of fronds. Orchideous plants now present themselves in considerable numbers, clothing the old trees with a parasitic vegetation. Higher still the figs are mingled with gigantic Liquidambars, with white trunks. To the Orchideæ are added the curious Nepenthes, or pitcher-plants, while the numerous ferns are accompanied by Loranthaceæ and elegant Melastomas. Above these comes the region of oaks and laurels, and here the Melastomas and orchideous plants become still more abundant, while the vegetation receives a new ornament in the elegant Freycinetias, which are found as pseudo-parasites, rubiaceous plants being at the same time abundant, growing by themselves and flourishing in the shade. There is but one region above that of oaks and laurels, where rubiaceæ, conifers, heaths, and other plants familiar to countries beyond the tropics, present to us the flora of higher latitudes. Cryptogamous plants, especially, are infinitely multiplied; fungi are abundant, and mosses cover the ground and invest the trunks and branches of trees. The ferns are now smaller in size, but are of an infinite variety of forms, and constitute an important portion of the vegetation."

Another interesting feature of the higher mountains of Java is the appearance upon them of plants closely allied to those of northern Europe. On the fine mountain of Pangerango, about 50 miles S.S.E. of Batavia, we meet with eatable raspberries at 6000 feet, cypresses at 7000, while at 8000 feet we come upon such familiar types as the honeysuckle, St. John's wort, and guelder-rose; and when we reach 9000 feet, we meet with the imperial cowslip, allied to species inhabiting Japan and the Himalayas, but of a peculiar species (*Primula imperialis*), found nowhere else but upon this single mountain top. The

following genera, characteristic of north temperate regions, were found upon the summit by Mr. Motley:—Two species of violet, three of ranunculus, eight or ten of rubus, and species of primrose, St. John's wort, swertia, lily of the valley, cranberry, rhododendron, gnaphalium, polygonum, foxglove, honeysuckle, plantain, wormwood, oak, and yew.

The zoology of Java is equally interesting. The island is very rich in mammalia, possessing about 90 distinct kinds. The majority of these are identical with those of Sumatra and Borneo; but many of the forms inhabiting those two islands are wanting, and there are a few peculiar to Java, or common to it and the continent, but wanting in the other islands. Thus, Java has no tapir, or elephant, or Malay-bear, or orang-utan, while the Javan rhinoceros and hare are identical with species found again in the Indo-Chinese countries. Among birds we meet with similar but still more remarkable facts. No less than 240 species of land-birds are known to inhabit the island, and at least forty are peculiar to it. There are, however, no less than sixteen genera found in Malacca, Sumatra, and Borneo, which are absent from Java, among which are such conspicuous birds as the Indian magpies (*Dendrocitta*), the green gaper (*Calyptomena*), the bearded roller (*Nyctiornis*), the Argus and fire-back pheasants, and the crested partridges. On the other hand, there are twelve Javan birds whose nearest allies (sometimes the identical species) occur in the Indo-Chinese countries or the Himalayas, while they are quite unknown in Sumatra and Borneo, the most popular example of which is the peafowl of Java, found also in Siam and Burmah, but not in the intervening islands.[1]

[1] For the details of these peculiarities and their probable causes, see *The Geographical Distribution of Animals*, by A. R. Wallace, vol. i. p. 349.

In reptiles, fresh-water fishes, and insects, Java is very rich, the forms agreeing generally with those prevalent in the other Malay islands and in the Indo-Malay countries. The insects are especially fine, and among the beetles and butterflies are some of magnificent dimensions and gorgeous colours; but, as in the birds, many of them are quite peculiar to the island and unlike those of Sumatra and Borneo.

Among the more remarkable large animals of Java are the rhinoceros, the tiger, the leopard, the wild dog, the wild ox, and two species of wild swine. Deer are abundant and of several species, but there are no antelopes or goats. Squirrels are very plentiful, and there are four species of monkeys. A singular animal, somewhat intermediate in appearance between a polecat and a badger, is the Mydaus, remarkable for its distribution on the higher mountains only. Dr. Horsfield states that it is confined exclusively to those mountains which have an elevation of more than 7000 feet above the sea, and that on these it occurs with the regularity of some plants, extending from one end of the island to the other on the numerous disconnected mountain summits. It emits an offensive stench like the skunk of America. Besides the peacock, two species of jungle-fowl inhabit Java—one a very beautiful species (*Gallus furcatus*), peculiar to the island and those eastward of it as far as Sumbawa; the other the common jungle-fowl of India and the Malay countries (*Gallus bankiva*), and the original stock of all our domestic poultry. There are also several species of partridge and quail, and some very beautiful pigeons, pre-eminent among which is the mountain fruit-dove (*Ptilopus roseicollis*), whose entire head and neck are of an intense rosy-pink, contrasting exquisitely with its otherwise green plumage.

6. *Inhabitants.*

The native inhabitants of Java are all of Malay race, but are divided into three nations, speaking distinct but allied languages. These are the Sundanese, of Western Java; the true Javanese, of Central and Eastern Java; and the Madurese, of the island of Madura and the adjacent parts of the larger island. Physically, however, they are all nearly alike, and are hardly distinguishable from the Malays of the other great islands and of the peninsula of Malacca, except that they are somewhat taller and better made. It is therefore not necessary further to describe them. As regards character, Mr. John Crawfurd, who had long and intimate experience of them, pronounces them to be peaceable, docile, sober, and industrious, and the most truthful and straightforward Asiatic people he ever met with. He believes that they have improved under a settled government, which has given them peace and security; for an old writer, Barbosa, describes them, in the beginning of the sixteenth century, as being "very malicious, great deceivers, seldom speaking the truth, and prepared to do all manner of wickedness;" and this was no doubt true, as the same terms will apply to many of the Malay peoples at the present day under the rule of despotic native princes, who govern by favouritism and intrigue, spend their lives in amusements and debauchery, and hold the property, the families, and even the lives of all their subjects at their disposal.

Java was a populous and wealthy island long before it was known to Europeans, for the Portuguese found there a comparatively civilised people, carrying on a great trade with surrounding countries, which they supplied with rice and native manufactures. The Javanese are good agriculturists, and are especially skilful in irrigation. Extensive valleys and mountain sides are terraced and

levelled in steps, and water is carried from the mountain streams so that every plot can be flooded or dried at pleasure. These terraced lands are of very great antiquity, but they are continually being extended, and they enable the ground to produce a constant succession of crops all the year round, and year after year, without manure, because the fertilising matter held in solution and suspension by all streams is retained upon the land instead of being carried away to the sea and wasted. This mode of terracing the land and compelling the streams to fertilise it effectually, is probably the most perfect system of agriculture conceivable, and were it applied in our own country, it would enable us at once to solve the problem of the economical utilisation of sewage; for we should then have, in all parts of the country, water ready to carry and dilute, and land ready levelled to receive, the rich manures that are now recklessly thrown into the sea, having first contaminated our streams and done as much mischief as possible.

The Javanese are careful and skilful workmen, whether in wood or iron. They build admirable boats and canoes, which cannot be surpassed for speed and elegance. Their *krisses* or daggers are also excellent, the steel blades being finely figured, and the handles and sheaths worked in the finest woods or in ivory, and ornamented with gold or jewels. They weave native cloths of fine quality, often intermixed with gold thread, and of beautifully blended colours; while they dye cottons in elaborate and tasteful patterns with a few simple tints obtained from earths and vegetables, but whose permanence and artistic merit put our more gaudy but evanescent colours to shame.

Like all the Malay races, and most uncivilised peoples, the Javanese are great gamblers, and are also very fond of cock-fighting. The upper classes, however, are fond of hunting, and are admirable horsemen. They hunt deer

on horseback, killing them with a short sword; while tigers are often surrounded and killed with spears. They have a peculiar kind of theatrical performance, in which the shadows of flat wooden figures are thrown upon a transparent screen, behind which the performer speaks the several parts, altering his voice to suit the different characters. The pieces are almost always historical dramas, taken from the ancient and legendary history of the island. They excel, too, in music, every chief or wealthy man having a *gamelang*, or band of musicians, generally ten or twelve in number. The instruments consist of gongs of various sizes for the deeper tones, and strips of metal or bamboo for the higher notes, arranged in frames so that a set of each can be conveniently struck by the performer. A *Bióla*, or one-stringed violin, leads the band, which is in constant requisition at all festivals. Some of the musical pieces performed are long and elaborate, but all are played by ear, the performers generally practising from childhood. On grand occasions, as at the wedding of a rajah's daughter, the *gamelang* will keep on playing at short intervals day and night for several days in succession.

7. *Language—Government—Antiquities.*

The language spoken in the greater part of Java is very ancient, and is much fuller and more elaborate than the Malay. It is written in a peculiar character, very different from the Arabic letters in which the Malay language is written, and equally different from the various characters used in India. There are three dialects of Javanese, the vulgar, the polite, and the ancient. The polite, or ceremonial dialect, is very peculiar. It appears to be a factitious language made by changing all familiar words, either by altering their terminations or by adopt-

ing words from other languages. This ceremonial language is that in which courtiers address those higher in rank than themselves, while inferiors are always spoken to in the vulgar tongue; but in writing the ceremonial language is always used, though addresses and proclamations are in the vulgar tongue. The ancient or religious language bears the same relation to the popular one that Sanscrit does to the modern languages of Hindostan. In Bali and Lombok it is still the language of the priesthood, but in Java it is entirely a dead language, only found in ancient inscriptions and manuscripts. It is known as the Kawi language. The literature of Java is abundant, and is wholly metrical, and it consists of romances and histories founded on Hindu legends and ancient Javanese story. The Sunda language is ruder and less cultivated, and is believed to have been introduced by some of the Malay tribes of Sumatra, in parts of which it is also spoken.

The native government of Java was a pure despotism, the sovereign being the arbitrary lord even of the property and life of his subjects. Previous to 1478 the religion of the island was Hindu, and there were many native princes; but in that year the Mahometan converts, who had become numerous, overthrew the chief Hindu principality of Majapahit, and the conversion of the whole island followed in the course of the succeeding century. The original source of the Hindu religion in Java is not known, but there is reason to believe that it dates back to the sixth or seventh century, or perhaps earlier. During this period magnificent palaces, temples, sculptures, and other works of art, were erected, whose ruins now astonish the traveller as he comes upon them in the midst of the forest or on the mountain side. The ruins of the ancient city of Majapahit cover miles of ground, and consist of paved roads, walls, tombs, baths, and gate-

ways, while sculptures of Hindu gods and goddesses in hard trachytic rock are often found in the forest, or remain *in situ* in the temples. Some of these buildings were of brick, and in their ruins show a degree of perfection of workmanship perhaps not equalled in any other part of the world. The bricks are exceedingly fine-grained and hard, with very flat surfaces and sharp angles. They are laid together with the greatest accuracy without any perceptible mortar or cement, yet often joining so closely that a penknife cannot be inserted between them. The surfaces seem, in fact, to adhere together in some incomprehensible manner. These brick buildings were richly ornamented with mouldings, projecting courses, recessed panels, and bold cornices, so as to produce a very fine architectural effect. The great temples and religious buildings, however, some of which remain in a sufficiently perfect state to give an idea of their size and beauty, were much more remarkable, and a short sketch of some of them will not be out of place.

One of the most extensive collections of sacred buildings is at Brambanam, near the centre of Java, between the native capitals of Djoko-kerta and Sura-kerta. One set, called Loro-jongran, consisted of twenty separate buildings, six large and fourteen small, the larger supposed to have been 90 feet high. They were all constructed of solid stone, everywhere decorated with carvings and bas-reliefs, and adorned with numbers of statues, many of which still remain entire. At Chandi Sewa, in the same neighbourhood, are many fine colossal figures. Captain Baker, who surveyed these ruins, said that he had never seen "such stupendous and finished specimens of human labour, and of the science and taste of ages long since forgot, crowded together in so small a compass as in this spot." They cover a space of 600 feet square, and consist of an outer row of eighty-four small temples,

a second row of seventy-six, a third of sixty-four, a fourth of forty-four, and the fifth forming an inner parallelogram of twenty-eight—in all 296 small temples, disposed in five regular parallelograms. In the centre is a large cruciform temple surrounded by lofty flights of steps, richly ornamented with sculpture, and containing many apartments. The tropical vegetation has ruined most of the smaller temples, but some remain tolerably perfect, from which the effect of the whole may be imagined. From their great numbers they are called by the natives the "Thousand Temples." About half a mile off is another temple, called Chandi Kali Bening, 72 feet square and 62 feet high, in very fine preservation, and covered with sculptures of Hindu mythology surpassing any that exist in India. Other ruins of palaces, halls, and temples, with abundance of sculptured deities, are found in the same neighbourhood.

The great temple of Borobodo is situated about eighty miles westward of Brambanam, in the province of Kedu, and is in some respects even more remarkable. It is built upon a small conical hill or mound, which it completely covers, consisting of a lofty central dome and seven ranges of terraced open galleries, regularly built round the hill, with numerous angles, and communicating by steps and gateways. The central dome is 50 feet in diameter; around it a triple circle of seventy-two towers, and the whole building is 620 feet square, and about 100 feet high. The terraced walls are surmounted by 400 cross-legged figures in covered niches, and both sides of all the terraced passages are covered with bas-reliefs, crowded with figures, and elaborately executed in hard stone, the whole being estimated to occupy an extent of wall of nearly three miles in length. The amount of labour and skill expended upon this sculptured hill-temple must have been as great as that required to build the Great Pyramid.

About forty miles south-west of Samarang, on a mountain called Gunong Prau (boat-mountain), is an extensive plateau covered with ruins. To reach these, four flights of steps were made up the mountain in opposite directions, each flight consisting of more than 1000 steps. Traces of nearly 400 temples have been found here, and they appear to have been all decorated with rich and delicate sculptures. The whole country between these and Brambanam, a distance of sixty miles, abounds with ruins, so that fine sculptured images may be seen built into the walls of enclosures, or lying neglected in ditches.

A NATIVE HOUSE IN JAVA.

When all these noble buildings were in their full perfection, Java must have presented a very different appearance from what it does now, when wooden houses or low whitewashed huts are alone to be seen through the greater part of the interior. The Mahometans destroyed these buildings as the signs of paganism; and they are now looked upon by the natives as the work of superior beings or of demons, and all the arts of architecture and of sculpture are totally lost.

8. *Dutch Conquest of Java—Population, etc.*

The Dutch made their first appearance in Java in the year 1595. In 1610 they obtained permission from a native prince to build a fort near where Batavia now stands. This fort and the settlement that grew around it was frequently attacked by the native princes, but always unsuccessfully; but it was not till 1677 that any territorial acquisition was made, the principality of Jacatra being then ceded. From that time up to the year 1830 the Dutch have been engaged in five great wars lasting from five to fifteen years each, but all ending in important acquisitions of territory; so that, although some of the native princes still retain a nominal sovereignty, the whole island is really conquered, and annexed to the crown of Holland.

The rule of the Dutch in this fine island is very successful. Good roads traverse it in every direction, life and property are as safe as in any part of Europe, and the inhabitants are as happy and contented as any people are likely to be under the rule of an alien race. The system by which the people have been made to work at fixed wages, and to sell certain products at fixed rates to the Government, has enabled the Dutch officials to remit a large annual revenue to Europe; but this has been done without any serious oppression of the natives, who have always been accustomed so to work for their native chiefs, or on the lands of the village community. One of the best tests of the general well-being of a community is that of the growth of the population; for where this is steadily increasing, where there is no pauperism, where serious crime is rare, and where famine and rebellion on any important scale are almost unknown, the government cannot be otherwise than suitable to the people governed. This is the case with Java. In 1850 the population was about 9½ millions, in 1865 it had increased to close upon

14 millions, in 1874 it was 16½ millions, and at the present time it is estimated at about 18 millions. It has therefore nearly doubled in eighteen years, and, notwithstanding that a large portion of the surface of the island is covered with lofty mountains and trackless forests, it supports a population of greater density than Great Britain. There are about 30,000 Europeans in Java, and 156,000 Chinese. The army consists of 27,000 men, of whom 11,000 are Europeans.

9. *Products and Revenue.*

The chief productions of Java are rice, coffee, and sugar; but it also supplies many other valuable articles, as indigo, cinnamon, maize, cotton, tobacco, teak, and recently quinine. Coffee and sugar have long been the objects of Government monopoly, from which a great part of the revenue has been obtained, but this is soon to be abolished and money taxes substituted,—a doubtful benefit to the labourer, since it will open the way to greater commercial activity, which will lead to the gradual alienation of the land to capitalists, give an unnatural stimulus to the population, and inevitably introduce the evils of feverish competition, pauperism, and crime, from which the country has hitherto been comparatively free. European rulers, imbued with ideas of freedom of labour and of commerce, will not understand that a child-like people can only be raised to independence and national manhood by means of a paternal government. It may safely be predicted that if the Dutch Government freely throw open Java to the world, the result will be that many capitalists will make fortunes, but the native inhabitants will not be benefited. The exports from Java amount in value to ten or twelve millions sterling annually; and the net revenue which is remitted every year to Holland varies from two to four millions.

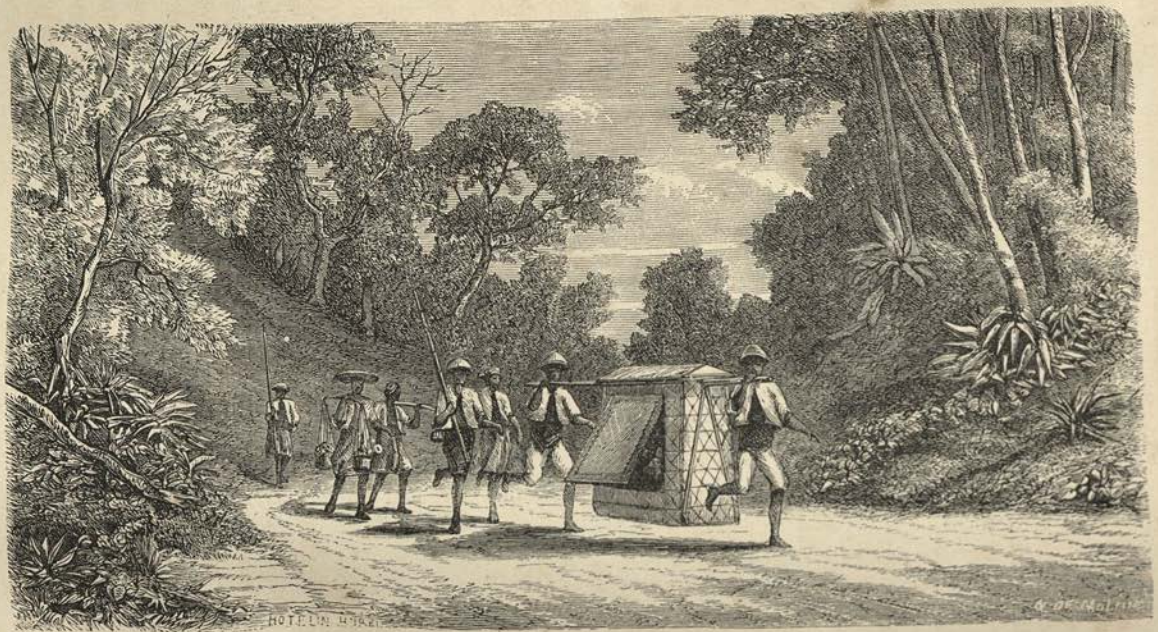
10. *Cities, Towns, and Villages.*

BATAVIA, the capital of Java and of all the Dutch Indian possessions, is situated on the northern coast of the island near its western extremity, on the banks of a small river, and surrounded by a low alluvial plain, a situation which long rendered it notoriously unhealthy. Drainage and good sanitary regulations have, however, now made it as salubrious as most other tropical cities. It consists of two distinct towns—Batavia and Weltevreden—the latter being a suburb about two miles inland, where are the residences of all the Europeans and officials, and all the chief hotels, clubs, museums, theatres, and other places of amusement. Batavia itself is the business town, full of warehouses, shops, and public offices, and inhabited largely by seafaring people, half-breeds, and Chinese. The two towns are connected by a straight road bordered by a canal, and with numerous houses and shops, and are, in general, collectively known as Batavia. The European part of the city is finely laid out, with broad streets bordered with trees; and as most of the private houses are low and are surrounded by gardens full of fruit-trees, palms, and flowering shrubs, the general effect is very pleasing, while numerous canals and streams help to keep everything moist and verdant. The old town has not much increased for many years, but the entire city, with its suburbs, has a population of nearly half a million.

SOURABAYA, near the east end of Java and opposite the island of Madura, is the next town of importance, having a population of about 100,000. The harbour is the best in Java, and it is here that the Government dockyards and arsenals are situated. The river of Sourabaya is navigable by boats far into the interior, and is the means of bringing down an enormous quantity of rice, sugar, and other products. The province of Sourabaya is exceedingly fertile and thickly populated, having about $1\frac{1}{2}$ million inhabitants.

SAMARANG is the third town of Java. It is situated near the centre of the north coast, to the west of the peninsula of Japara. It is now connected by a railway with the native capitals of Surakarta and Djokokarta, thus affording a ready outlet for the products of one of the richest and most populous districts of the interior. The population of the town is about 60,000, and of the province about 1,000,000. Coffee, sugar, and tobacco are largely exported.

The preceding are the only towns in Java which have a large proportion of European inhabitants. SURAKARTA, or Solo, is the largest native city, where the Susunan, or emperor of Java, still holds nominal rule over a province containing near a million inhabitants,



INLAND TRAVELLING IN JAVA.

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but under the supervision of a Dutch Resident, with a force of 500 soldiers and a fort. The emperor keeps up a ceremonial state, and is surrounded by an amount of luxury and magnificence not to be surpassed by any of the native princes of India.

DJOKOKARTA, or Yogyakarta, is the second native city of Java, the capital of a province of the same name, and ruled over in a similar way to Solo by a native sultan. This province is situated on the south coast of Java adjoining Surakarta, and has a population of about half a million.

About forty miles south of Batavia, and nearly a thousand feet above the sea, is the village of Buitenzorg, where the Governor-general has a fine palace, and many Europeans reside part of the year. The climate is delightful as a change from Batavia, the mornings and evenings being deliciously cool. There is here a celebrated botanical garden, in which all the finest vegetable products of the Malay islands are cultivated, and where avenues of palms, groves of bamboo, the spreading banyans, and flowering spice trees, alike luxuriate in the open air. The country around Buitenzorg is undulating and picturesque, and the rugged volcano of Salak, about ten miles distant, forms a fine object in the landscape.

Throughout Java there are no isolated cottages or farmhouses, but all the native population live in villages of various sizes. Each of these constitutes a village community superintended by a headman and his deputy with a village priest, who are elected by the occupiers of the land. These officers collect the taxes, superintend the police, and carry out the orders of the Waidonos, or heads of districts, as to public works or enforced cultivation.

11. *Communications, Commerce, etc.*

The highroads connecting all the chief towns of Java with the capital are excellent, and are supplied with regular posts, so that, by making arrangements beforehand, a traveller may have relays of horses to carry him day and night at the rate of ten miles an hour. A few railways have now been made connecting the chief ports with the interior. Those completed are from Batavia to Buitenzorg, and from Samarang to Djokokarta, and one from Samarang to Passaroean and Malang is nearly

finished. Regular steamers connect Batavia with Europe, and with all the chief ports of the archipelago.

The chief exports from Java in 1876 were—sugar, 143,613 tons; coffee, 5167 tons; indigo, 5220 tons; rice, 4147 tons; tobacco, 9787 tons; and pepper, 545 tons.

CHAPTER XVII.

SUMATRA.

1. *Position and Area.*

JAVA is separated on the west by the Sunda Strait from the great island of Sumatra, stretching, mainly in the direction from south-east to north-west, for 1000 miles. Sumatra has an area of some 128,560 geographical square miles, and is, consequently, about half as large again as Great Britain and the largest island in the archipelago except Borneo. Of its entire extent about 15,000 square miles are comprised in the independent state of Achin, while all the rest is divided into the four Dutch residencies of West Sumatra, Benkoolen, Lampongs, and Palembang. A large portion of the interior still forms a *terra incognita* occupied by Batak tribes, who allow no one to penetrate into their densely wooded highlands.

2. *Mountains, Volcanoes, Plains.*

The physical structure of Sumatra is a combination of that of Java with that of the Malay peninsula. The great mountain masses appear to be of ancient crystalline rocks, with much granite, from amid which rise volcanic peaks and several active volcanoes. The central mountains of Sumatra are very broad, consisting of great plateaus with diverging ranges, isolated peaks, and deep and winding valleys. In crossing the island anywhere except near the extremities, two or three great ranges are often found, with wide table-lands, plains, or valleys, with numer-

ous streams, and sometimes mountain lakes. The most westerly range generally forms the watershed, which is only about twenty-five miles from the coast, so that the larger part of the drainage finds its way to the Straits of Malacca and the Java Sea. It appears as if the western coast, fully exposed to the waves of the Indian Ocean, has not been able to extend itself, from the sediment having been continually carried away into the ocean depths, while on the east the comparatively still and shallow waters of the Straits of Malacca have allowed the sediment brought down from the mountains to accumulate till it has formed the great alluvial belt which here extends along the whole island.

The highest mountain in Sumatra is believed to be Lusé, in the territory of Achin, and in 4° 20′ N. latitude, its height being about 11,000 feet; but there are at least six more which attain a height of 10,000 feet, and some of these may be much higher. There are five active volcanoes, all occurring in the central region within a degree on each side of the equator. The loftiest is the volcano of Talang, on the Padang plateau, 10,250 feet high.

The plains, table-lands, and valleys of the mountain region, are often of great extent, and differ very much in character, some being forest-clad, others bare; some extremely fertile, others sterile. One of the latter class is the plain of Pertibi, situated in the country of the Bataks, in lat. 1° 20′ N., on the eastern side of the mountains. Mr. Willer, a Dutch writer, thus describes it:—"Descending from Gunong-Tuah we see unrolled before us a plain without horizon, and without variety except what may be caused by the presence or absence of the rank and worthless lalang grass (*Andropogon caricosum*). On this plain not a single living creature appears to move; a tree is a rarity, and has an appearance of

stunted dwarfishness. At the distance of miles we may descry, as an oasis in the desert, an insignificant thicket, or a small strip of brushwood along the banks of a marsh or brook. A fell scorching wind blows for months together, and, from the numerous conflagrations, spreads a dull haze, through which the sunlight scarcely forces itself—wavering and heavy. In a word, all nature appears to have gone to an eternal sleep. Such is the appearance of Padang-luwas (spacious plain), whose naked and flat surface offers no other diversity than the ravines and morasses with which it is intersected. The upper soil is of the most meagre and unfruitful kind, and is seldom more than six inches in depth. Beneath we come to layers of white clay, limestone, and sandstone. The climate is extremely rough. Frequently, in the afternoon, we have a temperature of from 92° to 97° Fahr., and in the night of from 63° to 66°. The heat is accompanied by great dryness. A violent storm, for the greatest part of the year, day after day, bellows from the west over Padang-luwas. Like the *mistral*, this wind has a strong desiccating power, cracking the ground, and in a few minutes removing all traces of mud and rain."

The neighbouring district of Mandeling, on the western side of the watershed, offers a totally different aspect, and is thus described by the same writer:—"The appearance of Mandeling is as varied and luxuriant as that of Pertibi is monotonous and arid. To the south are high and naked mountains, over which the lalang grass again spreads its monotonous mantle. Here hamlets and cultivated tracts appear to be stuck on frightful steeps, where unfruitfulness and poverty have established their hungry seat. The northern Ankola valley also presents some dry and desert places like those of Padang-luwas. But for the rest, the district consists of one chain of beautiful valleys hemming the banks of the Batang-

gadis (virgin river), which runs between the central mountains of Sumatra. These valleys, like the river itself, become wider and wider as we proceed to the north and west. The high chains of mountains are covered to their summits with stately woods, which afford abundance of good timber and other valuable products. On the lower mountains, too, are woods here and there, and these are commonly adorned with the wine-yielding Areng palm (*Saguerus sacchariferus*). Here we see well-watered rice fields, which, in small valleys like amphitheatres, climb up a considerable portion of the acclivities, and, in the distance, extend to an invisible boundary. Nowhere does the landscape weary. The eye rests constantly on ornamental groups of bamboos and various trees, or on the small clumps of fruit-trees in which the villages lie concealed, their position being especially marked by the abundance of cocoa and areca palms. Towards evening we observe near the villages numerous herds of buffaloes, oxen, and goats; while men, well fed and well clothed, and what is more, a superabundance of children, prove that in this favoured region the greatest prosperity has reigned for some years."

On the eastern side of the island the great alluvial plain, generally but a few feet above the level of the sea, is 600 miles in length, and from 60 to 110 miles in breadth, giving an area of 42,000 square miles, equal to more than half that of Great Britain. This, with the rare exception of a few patches on the river banks, and usually beyond the reach of the tide, is covered with a stupendous forest, coeval probably with the formation and elevation of the land itself. Much of this vast territory is of ample fertility, and suited to the growth of most of the products of tropical countries; but much of it is in the hands of rude tribes, quite unable effectually to cultivate it.

3. *Lakes and Rivers.*

Sumatra differs from most of the other Malayan islands in possessing several fine mountain lakes. The largest is lake Singkara, on the Padang plateau, the source of the great river Indrajiri, and is 20 miles long with a width of from 12 to 15 miles. To the north-west, at the foot of Mount Singalang, is another, somewhat smaller, called Danau Sapuloh Kotah, or "Lake of the Ten Forts." Farther south are two others, in the province of Korincha, in about 2° S. lat. The largest of these was visited by an English botanist, Mr. Charles Campbell, in 1800. It is about 7 miles wide, and 12 or 15 miles long, receiving a river from the smaller lake, and one or two other streams, but apparently having no outlet, although close to the sources of the Jambi river. The country around is well cultivated, and it is so elevated that the cocoa palm will not grow. Much farther south, in lat. 5°, is Lake Ranu, about 16 miles long and 8 wide, and surrounded on all sides by lofty mountains. It appears to be one of the farthest sources of the Palembang river, and to be little more than ten miles from the west coast. Two or three other mountain lakes occur in the Batak country, but little is known of them, and there are probably others in Achin. Of lowland lakes and swamps there are many on the courses of the great rivers.

The finest rivers of Sumatra are those of Siak and Palembang. The former rises on the northern slopes of the Padang plateau, and enters the sea behind the island of Bankalis, nearly opposite Malacca. The mouth is three-quarters of a mile wide, closed by a sandbank all except a narrow channel, through which large vessels can safely enter and ascend the river for eighty miles, while it is navigable for boats for seventy miles farther. The Musi,

or river of Palembang, receives the drainage from 220 miles of the great mountain ranges, and in the lower part of its course flows through a perfectly flat alluvial plain, which, in the rainy season, becomes a series of enormous lakes. It is navigable for large vessels for fifty miles to the town of Palembang, and by boats up its numerous branches for considerable distances. On the north coast are numerous rivers, but the first of importance are the Bila and Panei, which have a common estuary in 2° 35′ N. lat. Farther south is the Rokan, whose source is near that of the Siak. Between the Siak and the Musi are the Kampar, the Indragiri, and the Jambi, all large rivers flowing through the alluvial plain, and bringing down great quantities of water from the central mountains, but none of them navigable except for boats. The only river of importance on the south coast is the Singkel, whose mouth is 2° 10′ N. lat., and which is navigable for a considerable distance by small vessels.

4. *Natural History.*

Sumatra is probably rich in minerals, as coal, naphtha, sulphur, iron, and gold have been discovered, as well as indications of copper. The iron ore is of fine quality, and the native iron and steel manufactured in Menangkabo have been celebrated from time immemorial. Tin also exists, and is worked in Kampar, nearly opposite Malacca.

The flora of Sumatra is no doubt very rich, but is still comparatively little known. The celebrated *Rafflesia*, the largest flower in the world, is still almost peculiar to it. Its productions generally resemble those of Borneo, abounding, like that island, in sago and camphor, while it also produces benzoin and dragon's blood, dammar and gutta-percha, with great abundance of bamboos and rattans.

The zoology is better known; and this also offers great similarities to the Malay peninsula and Borneo, while differing much from that of Java. All the great mammalian forms of the continent are found here, such as the elephant, rhinoceros, tapir, and tiger; and it has also the siamang, a large ape found elsewhere only in the Malay peninsula, and the orang-utan, found also in Borneo. This latter appears to be rare, and to be found only in the eastern forest-plains opposite Malacca, as it is quite unknown in the Palembang district. Sumatra is rich in the monkey tribe, and has probably as many species as Borneo. It may have even more species of mammalia than the larger island, the numbers recorded being about equal, while Sumatra is certainly less explored. In birds also it is very rich, possessing representatives of all the beautiful and remarkable forms of Malacca and Borneo, with some few peculiar to itself.

5. *Races of Mankind.*

The aboriginal man of Sumatra belongs everywhere to the great Malayan race, although the different tribes vary much in language, customs, and social condition. No dark and woolly-haired race, such as exists in the Malay peninsula and the Philippines, has ever yet been found in Sumatra. Eleven different nations, speaking as many distinct languages, inhabit the main island, while four others are found in the adjacent small islands. Most of these are comparatively civilised, building good houses, practising elaborate agriculture, weaving cloth, and having written languages; while others are almost pure savages, with the same degree of civilisation as the Dyaks of Borneo or the Jakuns of the Malay peninsula. The most important and the most highly civilised are the Malays proper, who inhabit the mountain district of Menangkabo

to the north of Padang. They are supposed to be the remnant of the original conquerors of the island, but very little is really known about them. The district they inhabit is highly cultivated and well irrigated. Sir Stamford Raffles, who visited it, says: "As far as the eye could reach was one continued scene of cultivation, interspersed

PALACE OF A SUMATRA PRINCE.

with innumerable towns and villages, shaded by palms and fruit-trees. I may safely say that the view equalled anything I ever saw in Java. The scenery is more majestic and grand, the population equally dense, the cultivation equally rich. These people are more strict Mahometans than is usual among Malays, and they speak the pure Malayan tongue as in the Malay peninsula. Their numbers are believed to be about a million."

Next in importance and civilisation is the independent

sultanate of Achin, which occupies the northern extremity of Sumatra, and is about the size of Bavaria. At its northernmost point lies its capital, Achin, a sort of Asiatic Venice, where all the houses stand on piles sunk into the bed of a river flowing between muddy banks across the plain. The natives seem to be Malays of the oldest type, the ancient language of the people being still preserved in almost perfect purity. But whereas amongst other Malays are often to be seen comely and even handsome features, the Achinese, with their more southerly neighbours the Bataks, are about the most repulsive race it is possible to imagine. The Achinese are Mahometans, at least nominally, though they have never distinguished themselves by their persecution of other religionists. This tolerant spirit is illustrated by the saying current amongst their neighbours that "An Achinese will curse a Christian, and then invite him to bread and salt." Like most other orientals, they cheat whenever they can in all their dealings. They are unusually backward in all the handicrafts, except the weaving of a peculiarly delicate silken fabric, and in gold and silver filigree work of a very remarkable kind.

The monarchy is hereditary and absolute, though above, by the side of, and under the king are many civil and religious functionaries, often bearing wonderful titles. The chief occupations of the Achinese are fighting, drinking, betting, and opium-smoking, interrupted now and then by the time needed for the cultivation of his pepper, camphor, and areca-nut plants, wherewith to procure the means of indulging his favourite tastes. These plants, which here thrive excellently, are of the greatest importance for the Asiatic trade. The civets also yield a valuable commodity; hence their breeding forms a special branch of industry.

Achin formerly exercised a sort of sway over the Sunda

Islands, of which it was the most formidable pirate state, for in those days nearly all the Sumatra tribes scoured the seas, and the Malays even now regard the corsair's life as a highly honourable career. The Achinese more especially have cultivated this avocation, whereby they have brought about their recent troubles with the Dutch. Every Achinese is a soldier, and every village has its little army, which is bound to present itself equipped for service at the outbreak of war. Their arms consist of helmets, breastplates, sword, bow-and-arrow, with a sprinkling of modern rifles.

Next in importance to Achin and Menangkabo is the territory of Palembang in the south-east, whose people are believed to be a mixture of Malays and Javanese, and who speak a mixed patois. They have also mingled with two aboriginal tribes called Kumring and Kubu, the latter inhabiting the country northward towards the Sambi river, and being almost savages. The people of Palembang still use the Javanese language in their courts, and write it in the peculiar character of Java. The Sarawi are a people inland from Palembang, who have a peculiar language and written character. Farther west and extending to the coast at Benkoolen, are the Rejangs, having also a peculiar language and written character, the latter being the same as that used by the Sarawi. The Rejangs are one of the most civilised nations of Sumatra, and it is here that the chief seat of the English occupation was established at the end of the seventeenth century, and the attempt to establish a wealthy colony by the forced culture and monopoly of black pepper was continued for 140 years. It was from these people that Mr. Marsden, in his *History of Sumatra*, drew the following general character of the natives:—"The Sumatran of the interior, though partaking in some degree of the Malayan vices, possesses many virtues; but they

are more of the negative than the positive kind. He is mild, peaceable, and forbearing, unless his anger be roused by violent provocation, when he is implacable in his resentments. He is temperate and sober, being equally abstemious in meat and drink. The diet of the natives is mostly vegetable. Water is their only beverage, and although they kill a fowl or a goat for a stranger, they are rarely guilty of that extravagance for themselves; not even at their festivals, where there is plenty of meat, do they eat much of anything but rice. Their hospitality is extreme, and bounded by their ability alone. Their manners are simple; they are generally, except among the chiefs, devoid of the Malay cunning and chicane, yet endued with a quickness of apprehension, and on many occasions discovering a considerable degree of penetration and sagacity. They are modest, particularly guarded in their expressions, courteous in their behaviour, grave in their deportment, being seldom or never excited to laughter, and patient to a great degree. On the other hand they are litigious, indolent, addicted to gaming, dishonest in their dealings with strangers, which they esteem no moral defect, suspicious, regardless of truth, mean in their transactions, and servile. Although cleanly in their persons, they are dirty in their apparel, which they never wash. They are careless and improvident of the future, because their wants are few; for though poor they are not needy, nature supplying with extraordinary facility whatever she has made necessary for their existence."

The Lampungs occupy the south-eastern end of the island opposite Java, where there are mountains rising to a height of 7500 feet. They have a peculiar language, written in a peculiar character; and it appears to be an original tongue mixed with an equal proportion of Malay and Javanese. The Lampungs are rather a rude people, with an imperfect agriculture, and their country is thinly

populated. Last among the semi-civilised nations of Sumatra are the Bataks, who occupy the country between Menangkabo and Achin. The Bataks have gained a bad reputation for the practice of cannibalism; but they are, nevertheless, a people with many good qualities. The Dutch describe those tribes which are subject to them as being a patient, truthful, and industrious people. They understand the smelting and forging of iron; the cultivation of rice by irrigation; the culture, weaving, and dyeing of cotton; and they have domesticated the buffalo, ox, horse, and hog. But what is much more remarkable, they have invented a perfectly indigenous alphabet, and possess a rude literature written on palm-leaves and strips of bamboo. With all these characteristics of a somewhat advanced civilisation, they are yet pagans and cannibals. They are the only lettered people in the entire archipelago who have sturdily rejected the Mahometan religion, whose converts surround them on all sides. Yet they have no established faith of their own, but a general belief in evil spirits, omens, and the supernatural powers of their *gurus* or priests. Their cannibalism is undoubted, but it appears to be practised rather from enmity or revenge than from any desire for human flesh as an article of food. Their victims were either criminals, prisoners of war, or occasionally slaves; and the established punishment for certain crimes, such as adultery, midnight robbery, and being taken prisoner in war, was to be cut to pieces and eaten alive. The Dutch have found no difficulty in abolishing these practices wherever they have sway, and when this is done the people are found to be no whit worse than their neighbours, among whom such practices never existed. They are believed to number between 300,000 and 400,000.

6. *Islands belonging to Sumatra.*

On the south-west coast of Sumatra, at an average distance of 70 miles, is a chain of islands of considerable size. The largest and most important is Nias in lat. 1° N. Its length is about 80 English miles, by 20 wide, with a varied surface of hill and valley rising to a height of 800 feet above the sea. It consists of sedimentary rocks, with no volcanic formations, but is subject to violent earthquakes. The inhabitants of Nias and of the adjacent Batu islands are a tribe of Malays, said to be somewhat fairer than the natives of Sumatra, and having a peculiar language. They are a simple, mild, and primitive agricultural people, practising irrigation, and cultivating rice, cotton, and other valuable products. They possess the ox, buffalo, hog, dog, and poultry, and their villages in the interior are surrounded with earthen walls and thick hedges, so that they are little inferior to the more advanced Malay tribes. A number of Malays are settled on the coast, yet the people of Nias have never become Mahometans, but retain their own rude belief in good and evil spirits.

Farther north is Pulo Babi (Hog Island), about half the size of Nias, and inhabited by a less civilised race who speak another peculiar language, but have been converted to the Mahometan religion. It produces cocoa-nuts and buffaloes.

South of the Batu islands are the Sibiru, Pora, and Pagi islands. Sibiru is nearly as large as Nias, and has an active volcano. The other three are each about half the size of Nias. They are high and covered with forests, and are inhabited by a race of uncivilised Malays, who wear bark and leaf clothing, tattoo their bodies, and use the bow-and-arrow as their chief weapon. They live on sago and cocoa-nuts, and exchange the latter for iron

implements and weapons. Their domesticated animals are the hog, the dog, and the common fowl. This chain of islands is destitute of the larger animals of Sumatra, such as the tiger, elephant, and rhinoceros; but possesses deer, hogs, monkeys, and squirrels.

On the north coast are a series of low, flat islands separated from the coast by narrow straits, and inhabited by a few fishermen and sago cutters. We then come to a series of rugged and well-wooded islands commencing south of Singapore, and forming an extension of the Malay Peninsula. Of the group which forms the southern side of the Straits of Singapore the largest is Bintang, having an area of 336 geographical square miles, and mountains rising to nearly 1400 feet above the sea. The land is not good agriculturally, but is well suited to the cultivation of black pepper and gambir, which are largely grown and manufactured by the Chinese. Fire-wood and timber are also exported to Singapore. The Dutch, who exercise sovereignty over all these islands, have their chief town at Rhio or Riow, a small islet almost joined to the south of Bintang, and having a well-sheltered harbour. A little south is another group, of which Lingga is the largest, with a mountain 3755 feet high. Both these groups of islands consist of granite and sandstone, with the ferruginous clay formation called "laterite." They are all covered with dense and lofty forests of fine timber, among which are the trees yielding dammar, india-rubber, and gutta-percha. Honey and bees-wax are abundant, while the chief cultivated products are cocoa-nuts and some other fruits, black pepper, and gambir. The inhabitants are chiefly Malays, who live by fishing or by collecting the products of the forests, and Chinese, who are wood-cutters and cultivators of the soil.

The most considerable Sumatran island is Banca, so long celebrated for its large production of tin. It is

situated opposite the eastern coast of Palembang, from which it is separated by a strait from ten to twenty miles wide. The island is 130 miles long, with a width varying from 20 to 30. Its surface is rugged and irregular, but with no important mountains, the greatest elevation being apparently about 2000 or 3000 feet. It is full of small valleys and swamps, and everywhere covered with forests. The geological formation is granite, sandstone, and laterite, with extensive alluvial deposits in which are found the tin and gold which form the chief wealth of the island. The inhabitants are a rude class of Malays speaking the ordinary Malay language. They cultivate a little rice and make native iron, but live chiefly by fishing. The chief population of Banca now consists of colonists, Malays, Javanese, and Chinese—the latter engaged in digging, washing, and smelting the alluvial tin ore. The tin is a monopoly in the hands of the Dutch, who advance money to the Chinese miners, and pay a fixed rate for the produce. The net profits to the government, after deducting all expenses of the establishment kept up at the island, freight, etc., is said to average about a quarter of a million sterling. The population of the island is stated by Mr. Bickmore to have been, in 1865, 54,339, of which 17,097 were Chinese, and only 116 Europeans.

The zoology of Banca offers some interesting peculiarities. Although so near to Sumatra, all the larger carnivora are absent, except the Malay bear, while it has neither the elephant, rhinoceros, nor tapir. It possesses, however, deer, chevrotains or mouse-deer, wild hogs, squirrels, and civets. More remarkable is the occurrence of numerous peculiar species of birds and a squirrel, which differ from those of Sumatra and Borneo sometimes more than the species of those large islands do from each other. The explanation of this problem may perhaps be found in

the fact that the coast of Sumatra opposite Banca is of recent alluvial formation, so that formerly a very wide strait separated them. But the similarity of structure and linear arrangement renders it probable that Banca was once a southern extension of the Malay Peninsula, from which it has been isolated by subsidence of the intervening land. The animals now inhabiting it may therefore be the unmodified descendants of ancient Malayan species, which in the larger islands have undergone progressive changes.

To the east of the southern extremity of Banca is the considerable island of Biliton, of an irregular sub-quadrangular form, and about 40 miles across. In the strait which separates them (about 60 miles wide) there are several intervening islands. Biliton very much resembles Banca in its formation, appearance, and inhabitants. It also produces iron and tin, the latter metal being worked by a Dutch company. The great tin formation which commences in Tenasserim, and extends through the Malay Peninsula to Banca, here comes to an end.

7. *The Dutch Possessions, and the Chief Towns.*

The Dutch are now masters of a large portion of Sumatra with its islands, including the whole southern extremity as far as the Jambi valley, and a broad tract along the west coast as far as Sinkel, in about 2° N. latitude. On the north are a series of native Malay states —Jambi, Indragiri, Kampur, Siak, Asahan, Batu-Bara, Serdung, Deli, Lankat, and Riah—over which the Dutch claim supremacy, but which are practically independent. The total population of the Dutch possessions in Sumatra was estimated in 1868 at about two millions, besides 2000 Europeans. The chief towns and ports are Palembang, Benkoolen, and Padang.

The portion of Sumatra ruled over by the Dutch is under a Lieutenant-Governor, who resides at Padang; and is divided into six provinces, each administered by a Resident. These are—1. Padang, on the west coast, extending from near the equator to about 3° S., and varying in width from 15 to 50 miles. 2. The "Padangse Bovenlanden," or Padang Plateau, an inland mountainous tract about 160 miles long and 35 miles wide. 3. Tapanuly, extending along the coast northwards to the Singkel river, and including the conquered portion of the Batak country. 4. Benkoolen, extending south in a narrow strip to the south-eastern point of the island, a length of 350 miles, and varying from 5 to 38 miles in width. 5. The Lampongs, occupying the southern end of Sumatra, and forming an irregular triangle, each side being about 120 miles long. 6. Palembang, occupying a large portion of southern Sumatra, of a rudely quadrangular shape, and about 200 miles in length and width.

PADANG is the most important town in Sumatra, and the residence of the Lieutenant-Governor of the whole western coast. It is said to have 12,000 inhabitants, and is a place of considerable trade, there being several European merchants, with many Arabs and Chinese, and their mixed descendants. The streets are shaded with trees, and in the centre of the town is a large and beautiful expanse of grass, on one side of which is the Governor's house, and on the other a large and handsome club-house, with a church and some good private houses. The surrounding country is flat, with extensive rice-fields, and there are good roads shaded with avenues of trees leading inland. On ascending the hills about ten miles from the coast, we reach the Padang Plateau, at an elevation of from 2000 to 3000 feet, where is a climate well suited to the cultivation of coffee, which now forms the chief article of export from Padang, the quantity amounting to about 10,000 tons annually.

PALEMBANG is a large native town built on both banks of the river Musi, about 50 miles from its mouth. Large vessels can come up to it, and it is therefore the outlet for a great amount of native produce. Part of the native town floats on the river, supported on

huge rafts of bamboo, and rising and falling from ten to sixteen feet with every tide. Besides a large native population, the town contains many Javanese, Malays, and Chinese. Among the latter are makers of the painted and lackered wooden boxes used for keeping the ingredients of the favourite Malay stimulant, pinang or areca nuts, sirih or leaves of betel pepper, gambir, and lime. There are no European residents besides the Dutch officials and soldiers.

BENKOOLEN, situated on the south-west coast in about 4° south latitude, was long an English settlement, but was ceded to the Dutch in 1825 in exchange for Malacca. It is a small town, and not of much importance, the roadstead being much exposed, and the adjacent territory not very productive.

CHAPTER XVIII.

BORNEO.

1. *Dimensions, Form, and Outline.*

If we consider Australia to be more properly a continent, Borneo is undoubtedly the second island in the world, there being no other island but New Guinea, which even approaches it in magnitude. Its extreme length is about 850 English miles, and its greatest breadth 600. Its compact mass is somewhat pear-shaped, lying in a north-east and south-west direction. It has a coast-line of about 3000 miles without measuring the smaller bays and inlets, and its area is about 280,000 statute square miles, being nearly three and a half times as large as Great Britain, and considerably larger than the entire Austrian Empire.

The coast of Borneo is very little indented with bays, and nowhere by deep inlets, and it has few good navigable rivers. The few bays it possesses are towards the north-eastern extremity, where the coast is somewhat higher and more abrupt. As a rule, Borneo is throughout bordered by a considerable width of swamps and lowlands, except at a few points where there are high promontories, or a small extent of hilly country. The island is nearly bisected by the equator, there being a little more to the north than to the south of the line, and it extends from 7° 4′ N. to 4° 10′ S. latitude. It occupies a position in the centre of the greater Malay

Islands, being (roughly speaking) equally distant from the Philippines on the north-east, from Celebes on the east, from Java on the south, and from Sumatra and the Malay Peninsula on the west. It is thus removed from the violence of the monsoons, and enjoys on all its coast a tolerably calm sea. There are comparatively few islands around the shores of Borneo, the most important being the Natunas off the north-west promontory, and Pulo Laut on the south-west; but there are a considerable number on the north-east coast forming stepping-stones to Palawan, and by the Sooloo Islands to Mindanao.

2. *Mountains and Rivers.*

Although there are immense alluvial plains and valleys on the west and south, and a belt of low and level ground many miles in extent is the general character of the coast, yet the interior of Borneo, so far as known, appears to be hilly, with many abrupt and precipitous mountains, either in isolated peaks or in short ranges. The chief continuous range is on the north-west, where it forms a watershed of moderate elevation and about 100 miles inland. In the Sarawak and Sadong valleys this ridge probably does not exceed 2000 or 3000 feet, with peaks rising to 5000 or 6000. Farther north, however, to the south-east of Bruni, are many mountains believed to be from 7000 to 8000 feet, and one, Lawi, said to be much higher, and to form the culminating point of this district. Considerably farther north, and only 18 miles from the coast and 50 from Malludu Bay and the extremity of the island, rises in solitary grandeur the rocky mass of Kini Balou, said by Admiral Belcher to be 13,698 feet, but probably somewhat over-estimated. This mountain was first ascended in 1851 by Mr. Low, then colonial treasurer at Labuan, and in 1858 by Mr.

Spencer St. John and Mr. Low, who carried instruments to the top; but the barometer was out of order, and a storm of wind and rain prevented the boiling point of water being ascertained, so that the height of this fine mountain is still undetermined. A very lofty peak was seen bearing S. $\frac{1}{2}$ E., supposed to be Tibang, which the natives say is actually higher than Kini Balou—a fine object for explorers in northern Borneo. The country eastward towards Cape Kuniungun is also very mountainous, but is quite unexplored, so that, as far as is yet known, Kini Balou is the highest mountain, not only of Borneo, but of the entire Malay Archipelago.

The three largest rivers in Borneo are the Kapuas, a river of Pontianak on the west, the Barito, a river of Banjermassin on the south, and the Koti river on the east. All these appear to rise near each other, somewhat north of the centre of the island; they all have countless tributaries, and all, in the lower part of their courses, flow in very winding channels through a vast extent of forest-covered and swampy alluvial plains. On the northern coast the rivers are much shorter, but, being fed by the copious equatorial rainfall, are still large and imposing. The most important are the Batang Lupar to the east of Sarawak; the Rejang, a little farther east; the Barram, which enters the sea at Barram point; and the Limbang, at the mouth of which stands the native city of Bruni. The latter river was explored by Mr. St. John in 1858, nearly to its sources in mountains between 5000 and 6000 feet high, and about 20 miles north of the lofty Lawi mountain, which he was unable to reach. Besides these, there are hundreds of smaller but still considerable rivers all round the coast of Borneo, but hardly any admit of the entrance of large vessels, except the Bruni and Pontianak rivers for a short distance, and the small river of Sarawak.

No important lakes are known in Borneo, those that exist being for the most part expansions of the rivers in the plains or flat valleys, and generally shallow.

The scenery of Borneo is interesting, and often picturesque, from its luxuriant forests and the prevalence of abrupt basaltic or limestone hills, whose precipitous sides, clothed with shrubs and creepers, give variety to the landscape; but, except in the vicinity of some of the lofty mountains, it does not present the same amount of grand, varied, and extremely beautiful scenery to be met with in Java and Sumatra, or in the Philippine Islands.

3. *Geology and Natural History.*

So far as yet explored, Borneo differs wholly from all the other large islands in not possessing a single volcano either active or extinct. It appears to consist largely of granite, syenites, and trap rocks, with abundance of limestone, supposed to be Palæozoic and to correspond to our mountain limestone, and with Tertiary sandstones and conglomerates containing excellent coal. This mineral is very abundant, occurring plentifully in the Sarawak territory, at Labuan and Bruni, at Banjarmassin on the south coast, and at many intermediate points; and it is generally of very good quality, though apparently all of Tertiary age, the fossil plants found in the overlying shales being mostly leaves of exogenous trees like those of the existing forests. Mr. Motley, in his Report on the Geology of Labuan and neighbourhood, gives the following interesting description of its peculiarities:—"The coal, dense and perfectly carbonised as it is, yet exhibits most unequivocally its vegetable origin; and not only that, but even the kind of vegetation of which it has been composed is evident from the most cursory inspection of the heaps of coal brought out of the levels. It is

clearly the product, not of a bed of peat produced by the decay of small vegetation, but of a mass of huge timber. At least one half of the mass displays the grain and structure of wood, and frequently it separates naturally into the concentric layers of dicotyledonous wood. All the specimens I have examined have exactly the structure of the dipteraceous trees now forming the bulk of the timber growing above them. The trees must have been of vast dimensions. I traced one trunk upwards of 60 feet, and for the whole of that distance it was not less than 8 feet wide. They are all prostrate and slightly compressed, and lie crossing each other in all directions. What makes the resemblance of this coal to the wood of the Dipteraceæ still more striking is the existence in it of thickly scattered masses of semi-transparent resin dispersed through its substance. The clay below the coal contains a few carbonaceous particles, but no trace of Stigmaria or any other forms of fossil roots. In the shale above the coal are found occasionally erect trunks of small size, apparently, from the coats of their bark, dicotyledonous, but their whole substance converted into soft pulverulent coal; and, more rarely, palm trunks, also erect but solidified, and excessively hard. Impressions of leaves are in vast abundance, though rarely perfect. I have procured specimens of nine species of dicotyledons, of which two so closely resemble an existing species of *Barringtonia* and a dipteraceous plant which yields an oily resin named 'druing,' that it is difficult to believe them not identical. Besides these are two or three species of ferns, a large flag-shaped leaf like a Crinum, something closely resembling a large thick-stemmed confervoid alga, and four or five species of palms, one flabelliform and four pinnate, one of the latter very closely resembling an existing species. These vegetable remains are chiefly, but not entirely, in the lower part of the stratum. Sparingly

among them, but more abundantly in the upper half of the thickness of the bed, are found a good many casts of bivalve shells, much like some species of Unio."[1]

In some adjacent beds of shale are found marine shells consisting of species of *Cardium, Tridacna, Area, Ostrea, Tellina, Murex, Turbo, Cerithium,* and *Pecten,* all genera now living in the adjacent seas. "Upon a review of all these facts," says Mr. Motley, "it is impossible not to be struck with the remarkable difference in the phenomena of this coal-field and those of Great Britain. Here are no sauroid fishes, no stigmariæ, sigillarii, calamites, or lepidodendra; no ammonites, gryphaceæ, or other ancient forms of shells, as in the few marine deposits of the English coal-fields; but on the other hand, shells and plants of recent forms and families, rocks which have evidently been subjected to very slight compression, in general remarkably friable and wanting in cohesion, and entirely free from that semi-vitrified appearance and almost conchoidal fracture so common in England in the Pennant rocks and in many of the thick sandstones of Yorkshire. We have in fact the result of just such a state of things as is probably now in progress at the mouths of some of the great Borneo rivers; for example, in the estuary between Labuan and the mouth of the Bruni river, an almost exactly similar mass of clays and sandstones must be forming. In some parts the natives say they grow rice where their fathers caught fish." It is remarkable that such an evidently recent formation should be so much upheaved, the coal-measures of Labuan and Bruni dipping from an angle of 24° to nearly or quite vertical, the dip being N.N.W., or about at right angles to the direction of the great chain of mountains which rises nearly parallel to the coast. Mr. Motley's account of this coal formation would lead us to conclude that

[1] *Journal of the Indian Archipelago,* 1852, p. 566.

dense tropical forests growing on an extensive plain or river delta had been suddenly overthrown by flood or earthquake, or by sudden depression of the land, and had been covered with a deposit of clays or sands. He well remarks on the quantities of trees and shrubs which in the tropics grow on the sea-shore, or even in the salt water, and thus accounts for the presence of marine shells in the shales, and even in the coal itself.[1]

Other mineral products of Borneo are antimony, in great abundance at Sarawak; mercury; gold in the extreme west in Sarawak, Sambas, and Pontianak; and diamonds in the same districts; while native iron is smelted and manufactured by the Kyans and several other tribes of the north-western interior.

The vegetation of Borneo is exceedingly luxuriant, the whole island being, with few exceptions, one vast forest. It is especially rich in palms and forest trees, few of which have yet been botanically described. The vegetation is of course thoroughly Malayan, but the lofty mountain of Kini Balou contains a curious mixture of Indian, Malayan, and Australian plants. Here are numerous rhododendrons, forming trees 20 feet high, as in the Himalayas; here the characteristic Malayan pitcher-plants reach their maximum of size, variety, and beauty; and here are found such typical Australian genera as *Leptospermum*, *Leucopogon*, *Coprosma*, *Dacrydium*, and several others, among which is the Antarctic genus *Drimys*. In the lowlands, too, there are rhododendrons growing parasitically on trees or on exposed rocks; ferns

[1] A few years after the date of this report Mr. Motley, together with his wife and family, was killed during an insurrection of the Malays at Benjarmassing on the south coast of Borneo, where he was superintending a coal mine for the Dutch Government. This gentleman was an excellent naturalist, and had he lived would probably have given us much valuable information on these Tertiary coal-fields, which he had unrivalled opportunities of studying.

and orchids are in endless variety; and the strange *Vanda lowii* hangs down its elegant flowers, like crimson stars strung upon slender cords sometimes 10 feet in length. The native vegetable products of the Bornean forests are very numerous, including gutta-percha, india-rubber, dammar, camphor, benzoin, eagle-wood, sago, rattans, ebony, and abundance of fine timber. Of cultivated products pepper is the chief, but cotton, sugar, and rice are grown for native use; there is much land available for coffee, and every vegetable and fruit of the tropics may be here cultivated. Nowhere are those delicious native fruits, the mangosteen and the durian, more abundant than in Borneo.

The most remarkable feature in the zoology of Borneo is the absence or rarity of many large animals found in the adjacent islands. Thus, the tiger and the leopard of Java and Sumatra are unknown, their place being supplied by a smaller species, the *Felis macroscelis* of naturalists. Hardly less remarkable is the absence of both the elephant and rhinoceros from by far the larger part of the country. It was, indeed, long doubtful whether they existed at all, but it is now ascertained that the former is to be found on the eastern peninsula near Giong Bay, while the latter has a somewhat more extensive range, being found about the sources of the Koti river. A rhinoceros' tooth has been found in a cave in Sarawak, indicating that the animal was once as abundant as it is still in Sumatra, and it is not easy to understand why its numbers should have so diminished. No remains of the elephant have been found, and some naturalists believe that the existing herds are the descendants of animals sent as a present to the Sultan of Sooloo, and at his request landed on the adjacent coast of Borneo, where they became wild. Forrest, however, declares that elephants abounded in the Sooloo Islands in his time, and

Mr. St. John had this confirmed by natives who had seen them before they were hunted and exterminated on account of the mischief they did. It seems more probable, therefore, that they are wild in Borneo, but why they are confined to so small a district when the larger part of the island seems so well adapted to them remains a mystery. Wild cattle are also confined to the northern part of the island, where in some districts they are abundant, but whether they are a wild species or the descendants of domestic cattle introduced by the Spaniards seems doubtful. Borneo is very rich in monkeys, and has many peculiar species, the most remarkable being the proboscis monkey (*Presbytes nasutus*), whose long and fleshy nose gives it a very man-like aspect; and the orang-utan or "mias" of the natives, next to the gorilla the largest living ape. This creature is abundant in all the lowland forest districts, being especially plentiful in the great swampy forests of the north-western and southern coasts. Curious arboreal insectivora, squirrels, otters, deer, and wild swine, are also abundant.

In birds this island agrees very closely with Sumatra, the peacock being absent while the argus and fire-backed pheasants abound. Hornbills are very varied; and of the beautiful family of the Pittidæ, or ground-thrushes, Borneo has more species than any other island, including some of the most beautiful known. Reptiles abound, as in all the Malayan islands, but there are in Borneo many peculiar species, including two kinds of crocodiles not found elsewhere. Insects are excessively abundant, and many are of the largest size and of extreme beauty. One of the butterflies (*Ornithoptera brookeana*) has wings resembling black velvet on which is laid a row of elegant golden-green feathers; while Phasuridæ, with richly-coloured wings, are unusually numerous.

4. *Native Races of Borneo.*

The aborigines of Borneo are all of Malay race, and are generally known as Dyaks, but they are divided into numerous tribes, speaking distinct languages and having

A DYAK WARRIOR.

different appellations. They hardly differ physically from the Malays, except in being somewhat lighter and more active, and they are generally of a more cheerful and child-like disposition. In the north-west the Dusun or Ida'an tribes—the Kanowits and Pakatans, correspond to the Land Dyaks of Sarawak, while the Milanows

correspond to the Sea Dyaks. In the northern interior, on the Upper Koti and Barram rivers and the head waters of the Rejang and Bintulu, are the Kayans, who are one of the most advanced of the savage races, and are celebrated for making iron and manufacturing admirable

A DYAK DANCER.

weapons. They are very warlike, and are strongly addicted to head-hunting and making slaves, so that they are the terror of all their neighbours, and make a desert on their borders. There is reason to believe that they are an intruding race, who have come from the east coast, and perhaps entered there from Celebes. They have many peculiar customs, some of which are unknown in

any other part of the world.[1] The Kayans, Kanowits, Pakatans, and some other tribes are tattooed, and all are heathens.

There are, however, several semi-civilised Mahometan tribes of Malays in Borneo. The Malays proper occupy almost all the coasts, and the Malay Sultan of Bruni long ruled the entire north-western districts from Sarawak to beyond Malludu Bay, and exacted tribute from the Dyak and other tribes far into the interior. The Kadayans who inhabit the hill country round Bruni are believed by Mr. St. John to be an aboriginal race converted to Mahometanism. On the northern and north-western coasts are settlements of Bajus and Lanuns. The former are the sea-gipsies, who are found scattered here and there all over the archipelago. The latter are natives of Magindano, and are much addicted to piracy. As a rule the Dyaks and all the pagan tribes wear rude clothing of bark or cotton cloth, and the women deck themselves with abundance of beads, brass wire, and plaited girdles. The men generally wear only the "chawat"—a long band of bark or strip of cotton cloth passed between the legs and round the loins, with sometimes a jacket. The women wear a short petticoat, and in some tribes wear a band of bark or bamboo bound together with brass wire or rattans, and sometimes also a jacket. The women, as with most savage tribes, do much hard labour, whereas among the Malays and other Mahometans the women are almost wholly confined to house-work, occasionally assisting in the fields at harvest-time. The practice of taking heads

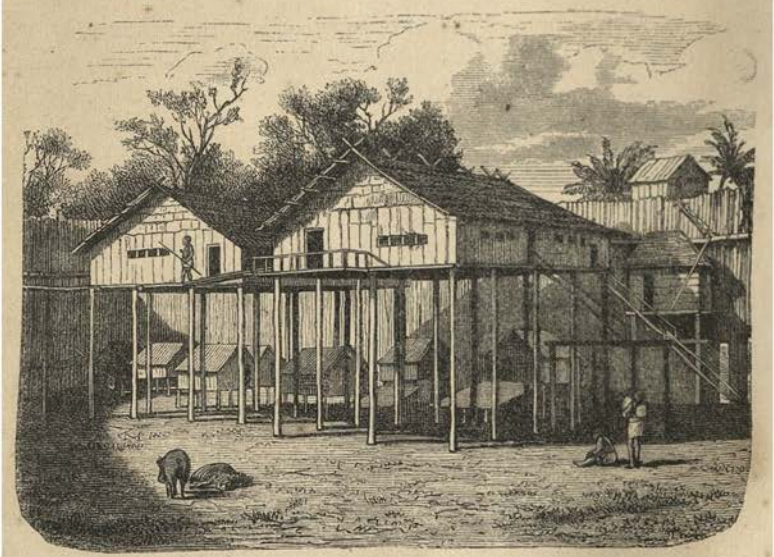
[1] Apud Kayanenses mos est virorum transverse sibi perforare glandem penis atque illa inserere aciculam seu spinulam auream, argenteam, osseam, aut denique duro ligno confectam quæ utrimque prominet. Quandoque duæ hujusmodi aciculæ recto obvenientes angulo inseruntur. Nec inter coitum istæ amoventur aciculæ, imo (uti fertur) mulieres cum viris quibus illæ desunt rem habere recusant. Primus de hac re tractavit Daltonus de regione "Koti" dicta referens, cui etiam viatores plene consentiunt recentiores.

as trophies was common among almost all the Dyak tribes, but has now been abolished where European influence is predominant. A young Dyak could not marry, nor a parent or widower leave off mourning, till a head was obtained. These heads were dried and carefully preserved in their houses. It was a custom, and as a custom was observed, but it did not imply any extraordinary

EXTERIOR OF A DYAK VILLAGE.

barbarism or moral delinquency. On the contrary it is the general opinion of all who know them well, that the Dyaks are among the most pleasing of savages, that they are kind, truthful, and have many excellent qualities. The Dyak houses are generally very large, many families residing together, and there is in every village a council-house where the young unmarried men sleep, where councils are held, and where travellers are lodged. The

houses are always raised on posts, often to a great height where subject to attacks from other tribes; or they are built perched up on almost inaccessible mountains, only to be reached by ladders up the face of lofty precipices. The Dyaks cultivate rice and many kinds of vegetables, and have large plantations of fruit, often covering whole mountain sides and furnishing them with an important



INTERIOR OF A DYAK VILLAGE.

part of their food. They also grow tobacco and sugar-cane for luxuries. Their weapons are spears, the blow-pipe, snares, and pitfalls, and with these they capture all kinds of wild animals for food. They collect beeswax, edible birds' nests, and other products of the forest, and exchange them for tools, clothing, or ornaments, and especially for brass wire, gongs, and brass guns, which constitute the wealth of every Dyak chief. The Dyaks

DYAK BAMBOO BRIDGE.

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of the interior of Sarawak are celebrated for the construction of ingenious bamboo suspension bridges over the rivers, to enable them to cross to their plantations or to other villages during floods. Mr. St. John tells us that the rivers sometimes rise forty feet during a flood, and that even a single heavy shower will render the fords impassable. The bridges are generally placed where large trees overhang the river. These are connected by strong bamboos lashed together, and supported at several points by cords of rattan. A light but shaky handrail is fixed a few feet above, but the whole is so slender and elastic, and the foothold on the smooth bamboo so insecure, that it requires some nerve in a European to cross such a bridge as is represented in the accompanying illustration. None of the indigenes of Borneo have invented writing, while the Malays all use the Arabic character to write the Malay language.

Several other peoples have settled in Borneo, which, from its central position, has naturally become the receptacle of wanderers from all the surrounding islands. From Java there has evidently been a considerable immigration, though these people have not kept distinct, but have become merged in the Malay or Dyak tribes. This is proved by the number of Javanese names of places in southern Borneo, of which Mr. Crawfurd adduces numerous examples, as, Mogasari, "conspicuous flower;" Chandi, "the temple;" Banjarmassin, "salt garden;" Gunung-aji, "king's mount;" etc., etc. Even in the language of the aborigines are several purely Javanese words, as of the dog and fowl in the Kayan language. The same thing is shown by the remains of Hindu temples and images in the south and west of Borneo, bearing a close resemblance to those so abundant in Java. Some of these are found 400 miles inland, in the Koti valley; and they prove that the Hindu people of Java

had at one time made a regular settlement in the island, but were subsequently exterminated either by the ferocious Kayans or the warlike Mahometan Malays.

The Bugis of Celebes have also made considerable settlements on the south and east of Borneo, and are particularly abundant on the rivers Pasir and Koti, where they are the chief traders. Farther north are the settlements of the Sooloos, who speak the Bisaya language of the Philippines, and who hold an extensive tract of country around Cape Unsang under the rule of the Sultan of Sooloo. A number of these people are also settled on the coast and rivers near Bruni, where they are known as Bisayas, from the language they speak.

The only other people who have settled in Borneo in any numbers are the Chinese, who are to be found in every town on the island, either as traders, miners, mechanics, or agriculturists. They are most numerous in the western parts of the island, where gold and diamonds are to be found, and there are said to be near 150,000 in the Dutch territories alone. There are also a considerable number in the Sarawak territory, where, in 1857, they rose in insurrection, obtained temporary possession of the chief town Kuching, and nearly succeeded in killing the English Rajah, Sir James Brooke, and obtaining absolute possession of the district. Their utter defeat, however, has rendered the whole island now much safer.[1] Many of them have Dyak wives, and there is now a considerable mixed population, but as there are continually fresh immigrations from China, the race remains essentially Chinese in character.

5. *European Settlements in Borneo.*

The Dutch claim suzerainty over the greater part of

[1] For an excellent account of this insurrection, see Mr. St. John's *Life in the Forests of the Far East*, vol. ii. p. 354.

Borneo, except only the north-west from Sarawak to the Sooloo territory, and they have established a regular government over the coast districts of the west and south. They first visited Borneo in 1598, and traded with the natives for gold, diamonds, and pepper. In 1785 they obtained some territory at Banjarmassing, by treaty with a native chief, and since then have gradually increased their possessions and their influence.

The Dutch possessions in Borneo are divided into a western, and a southern and eastern district, each under a resident. The chief town of the western district is Pontianak, after which the residency is often named. It is under the nominal rule of a native sultan. Its subdivisions are Sambas and Montrado on the north, Pontianak on the west coast, and Sintang in the interior, comprising the whole upper portion of the Kapuas valley. Sambas (also under a native sultan) produces coffee and cotton. Montrado is largely occupied by Chinese, who have settled there for more than a century, and work the mines, which abound in this district and in Landak to the east. Tin, gold, and diamonds, are obtained here, the gold-mines being the richest in Borneo. Sintang, on the Upper Kapuas river, is the seat of an Assistant-Resident, who governs the numerous tribes of Dyaks in the interior.

The chief place of the southern districts is Banjarmassing, a town of about 6000 inhabitants, many of whom are Chinese, the rest Malays. The interior is occupied by numerous tribes of Dyaks. To the east of Banjarmassing is Martapura, where are extensive coal-mines, with an Assistant-Resident. Farther inland, at Amoentai, there are many Hindoo antiquities. In the Koti valley on the east coast is an Assistant-Resident living at Tengarong, about 50 miles up the river. Here is an independent Malay sultan, and southward in Pasir another sultan with several subordinate Malay rulers.

Lower down on the river at Samarinde is a fortress commanded by a Bugis chief. The inhabitants of the upper waters of the Barito or Banjarmassing river and of the Koti are mostly Kyans, distinguished from the Dyaks to the westward by being tattooed.

6. *The English Settlements at Sarawak and Labuan.*

The territory of Sarawak, on the north-western coast of Borneo, is in many respects one of the most interesting spots in the whole vast extent of the tropical world, for here an English gentleman rules as absolute monarch over a considerable population of Malays and Dyaks, to the complete satisfaction and contentment of both. The former look up to him as a great and just king, the latter as a beneficent protector. The English rule has now lasted nearly thirty years, and so far as we have information, it appears to be firmly established. It has withstood the early machinations of discontented Malay chiefs, an insurrection of Chinese miners, and the death of its founder; but, as it has not relied for support upon either force or fraud, but has always existed *for* the well-being and *through* the good-will of the people governed, it has taken firm root in the soil, and seems likely to endure for many generations if the wise policy of its founder continues to be the guiding star of his successors. Let us then briefly sketch the career of Sir James Brooke, Rajah of Sarawak, and see what lessons we may learn from it.

Early in 1839 Mr. Brooke reached Sarawak in a vessel of his own, and finding the country in a state of chronic insurrection, helped the Rajah Muda Hassim to suppress it (partly by an exhibition of force and partly by conciliation), and received as a reward the title of Rajah of Sarawak, a small territory about 60 miles long by 50 wide. After some trouble and delay, the title was confirmed by the

Malay Sultan of Borneo, in September 1841, and Mr. Brooke, intensely interested in his strange acquisition, at once set himself to work to consolidate his power, to introduce just reforms, to establish a code of laws, to develop commerce, and to suppress piracy. The condition of the country was such that the work might have appeared hopeless to a less wise and energetic ruler. Complete anarchy prevailed. Malays were fighting against Malays, and Dyaks against Dyaks. The condition of the latter was miserable in the extreme; they were exposed to every exaction, their children were taken from them for slaves, their villages were attacked and often destroyed by piratic tribes from the adjacent rivers, and the destruction of their crops often exposed them to the extremity of famine. To the Malays the Dyaks were people to be plundered in every way, and when it could not be done openly, it was effected by means of tax-collecting and forced trade, against which the poor Dyaks were at first afraid to complain. In a very few years this system was wholly changed; the Dyaks were protected from plunder and imposition so long as they paid the moderate tax levied upon them, and the Malay chiefs obtained their dues with more regularity, and without the need of supporting a crowd of followers who lived on plunder. The Malays who had formerly administered the internal affairs of the district were kept in office, and as no new laws were made without their advice and co-operation, neither their emoluments nor their dignity were seriously interfered with.

The little opposition Mr. Brooke experienced in making these radical changes was largely due to his extremely conciliating and dignified manner, so accordant with the Malay character; and to his having acquired the Malay language by intercourse with the higher classes, and being able to speak it with great purity and ease.

He was also tolerant of native prejudices, and had studied the native character so completely that he well knew how to influence it. His personal courage, and the sagacity and boldness with which he detected and put down some of the early conspiracies against his rule, won the better class of chiefs to his side; and the great respect he always paid to the Mahometan religion, even using the precepts of the Koran as the foundation of many of his amendments of the law, disarmed the opposition of the priests, and enabled him subsequently to introduce English missionaries among the Dyaks without exciting the least animosity.

No less wisdom was shown by the mode in which justice was administered. Three courts were established, a police court, a general court, and a native religious court—the latter chiefly for the settlement of cases relating to marriage or divorce. The police court dealt with the simplest cases, the general court with all other cases civil and criminal. There were no lawyers, and hardly any forms. The parties in dispute appeared with their witnesses. They gave their evidence and were examined by the judge, assisted by the native chiefs, and by any European residents who chose to be present, and they obtained substantial, cheap, and speedy justice. The Rajah had associated with him in the government a small body of Englishmen, carefully selected, and who took their tone and manner from him; and every native knew well that if he was wronged he could get redress, and that the wealth or power of his oppressor would avail nothing with his judges.

The success of this system of rule was never better shown than during the Chinese insurrection, when, having narrowly escaped with his life—his friends killed or wounded, his house burnt down, and much of the town destroyed—the whole population, Malay and Dyak alike,

rallied round the English Rajah, drove out and almost exterminated the invaders, and triumphantly brought him back to rule over them. In what other country shall we find rulers alien in race, language, and religion, yet so endeared to their subjects? And the phenomenon is still more marvellous when we consider that these subjects were themselves of two races—a superior and an inferior, an oppressing and an oppressed; yet both alike joined to bring back the foreign ruler who had introduced equality and had stopped oppression. This example shows us that the art of governing half-civilised races is not so complex and difficult as has been supposed. It requires no peculiar legal, or diplomatic, or legislative training; but chiefly patience, and good feeling, and the absence of prejudice. The great thing is, not to be in a hurry; to avoid over-legislation, law-forms, and legal subtleties; to aim first to make the people contented and happy in their own way, even if that way should be quite opposed to European theories of how they ought to be happy. On such principles Sir James Brooke's success was founded. It is true, he spent a fortune instead of making one; but he had his reward in having brought peace, and safety, and plenty, where there was before war, and oppression, and famine, and in leaving behind him, over the whole of northern Borneo, a reputation for wisdom, for goodness, and for honour, which will dignify the name of "Englishman" for generations to come.[1]

[1] This account of Sir James Brooke's rule is chiefly founded on the editor's personal observation. We may add the testimony of Mr. St. John, who tells us, that Sarawak appears to the natives of the western coast of Borneo like an oasis to the wandering Arab, and it is often visited by the people of the neighbouring countries as a sort of curiosity—so rare is security for life and property, and freedom from oppression! A party of Dyaks from the Upper Kapuas river once arrived in Kuching (the chief town of Sarawak) after fifteen days' journey, merely to discover whether or not it were true that the Dyaks were there living in peace and comfort. —(*Life in the Forests of the Far East*, vol. ii. p. 323.)

Having suppressed piracy in the adjacent rivers, the Rajah obtained from the Sultan of Borneo the government of all the coast, as far as Kiderong Point, more than half-way to Bruni, including the entire valleys of the Batang Lupar, Rejang, and Bintulu rivers, inhabited by many warlike tribes which the Sultan's government had never been able to keep in order. The Sarawak territory is therefore now about 300 miles long and from 50 to 100 miles wide, comprising much valuable land, grand forests and mountains, and several navigable rivers. The Rejang is the most important of these, as its mouth has a depth of five fathoms at high water, and continues equally deep for 130 miles. There can be little doubt, therefore, that this valley will some day be the seat of a flourishing community.

The people inhabiting the territory are various. The Malays proper abound most at Sarawak itself, with a few settled on the banks of almost every river and creek. The Chinese abound most at Sarawak and at the gold mines up the river. Some are working gold in the Batang Lupar river, and there are petty traders everywhere. The Land Dyaks occupy Lundu and the interior of the Sarawak, Samaraham, and Sadong rivers. The Sea Dyaks are found chiefly to the eastward of the Sadong river, and were formerly many of them pirates. Milanows are settled at the mouths of the Rejang, Bintulu, and several of the smaller rivers. Several tattooed races, known as Kanowits, Pakatans, and Punans, live inland between the Rejang and Bintulu; and beyond them are the Kyans, who have already been alluded to. Taking all these together at the most moderate estimate, Mr. St. John thinks they amount to at least 240,000 persons.

The present Rajah is Mr. Charles Johnson Brooke, nephew of Sir James Brooke, and adopted as his son and successor by the Malay chiefs before Sir James finally left Borneo.

7. *Present Condition of Sarawak.*

In the Consular reports presented to Parliament, and dated February 1878, is one by Consul-General Ussher on the present condition of Sarawak; and as this is a matter which cannot fail to interest every Englishman, we will conclude this chapter with some facts and extracts from this important and authoritative paper.

8. *Native Population.*

As to the present condition of the native populations, we are told that "the once piratical tribe, who, in common with the Balanini and Illanuns, once devastated the Archipelago, since their subjugation by Sir James Brooke have proved to be among the staunchest and most loyal supporters of the Brooke dynasty, and are principally relied on as a local militia in case of trouble.

"The Chinese in Sarawak are now an orderly and well-conducted community, and although many times more numerous than they were, would never again dream of such a rash experiment as their outbreak of 1857. The conspiracy was supposed to have been incited principally by exaggerated news of English disasters in China, and to have had extensive ramifications elsewhere. The Government of Sarawak has since then instituted a heavy penalty against those taking part in a 'huey' or secret Chinese society, the members of which in Sarawak, as well as in Singapore and Penang, are generally the instigators of riotous and rebellious conduct on the part of the Chinese.

"The Malays of Sarawak struck me as being a superior race to those of Bruni. Many of the chiefs have pleasant faces, and exhibit an intelligence that has probably been called into existence by the active part

they are permitted to take in the government of the country.

"The Dyaks appear to be steadily improving; their country, once a terror to strangers as the land of 'head-hunters,' is now orderly and safe; and their chiefs take an active part in the management of their own local affairs, and are subsidised and recognised by the general Government."

9. *Government.*

"The Government of Sarawak may be termed a mild despotism, its arrangements being in their general features and effect not unlike the constitution of a Crown colony. The Rajah is the absolute head of the State, and he possesses the power of spontaneous and independent action; this power is, however, rarely exercised, and for all practical purposes of local and general government he is assisted by a legislative council composed of two Europeans and five native Malay chiefs.

"A larger assembly or council is periodically held, composed of the principal representatives, native as well as European, of the several districts. It numbers between 50 and 60 members, and sits once in three years, or when specially summoned to discuss important and pressing business. Any important change in the law or modification of native custom, would be considered by the General Council, and rejected or confirmed as occasion might suggest.

"The government of the various districts and out-stations, forts and rivers, is entrusted mostly to European officers, who are termed residents, assisted by subordinate or assistant-residents, and by native or Eurasian and Chinese clerks. The total number of the European staff is now nineteen."

There is a long discussion in the Report on the

system of slavery universal among the Malays, and its treatment by Sir James Brooke and his successor, the concluding paragraph of which will be sufficient here.

"To summarise, the general tendency of the Sarawak laws and regulations respecting slavery is to abolish the system gradually and effectively without disturbance, to face a social evil, and by recognising it, to reduce it to within the narrowest limits, pending its total abolition."

10. *Military Force.*

"The permanent military force of Sarawak consists of a well-drilled and effective body of men termed the "Sarawak Rangers;" they number about 200, and are well made and of powerful physique, being mainly recruited from the Dyaks, whose beauty of form, united with their strength and activity, is rarely to be surpassed. They are neatly dressed in white tunics and trousers, with black braid ornaments, and are armed with the Snider carbine. The forts at the out-stations are massive wooden structures armed with a few smooth-bore guns of old pattern, and manned by a dozen fort-men. They are fourteen in number, and are mostly occupied by the European officers of the districts.

"The militia, which constitutes the real force of Sarawak in the hour of danger, is composed of all the able-bodied men in the tribes of the Batang Lupar, Serebas, and other Sea Dyaks; of the same tribes, in fact, the subjugation of whom by the late Sir James Brooke, and their transformation into defenders of their country from their former occupation of bloodthirsty pirates, was the subject of so much misunderstanding in England, and the cause of much undeserved animadversion on a high-spirited and humane ruler. These people could turn out about 25,000 warriors, who are ready to

assemble at the summons of the Government, and devote themselves to its defence. In consideration of their services they receive exemption, partial or complete, from the capitation tax."

The naval force of Sarawak comprises the gunboat "Aline" a fine vessel, a screw steamer of about 250 tons burden, and two heavy river steam-launches.

Besides the forts, the most striking buildings are the "Astana," or residence of the Rajah at Kuching, a handsome and well-ordered dwelling, replete with every comfort, and surrounded with tastefully laid out grounds. There is also a court-house, fort, barracks, and prison. Several roads are being cut through the forest in various directions; but the principal means of communication lie in the numerous rivers and streams intersecting the country.

11. *Exports and Imports—Revenue, etc.*

The chief native products of Sarawak are as follows:—raw sago, sago flour, pearl sago, antimony, quicksilver, gold, diamonds, coal, timber, gutta-percha, india-rubber, cocoa-nuts, rice, dammar, canes, and dyewoods. Of these, sago, quicksilver, antimony, gutta-percha, and rattan-canes are at present the most important.

The imports consist mostly of opium, salt, tobacco, cloth, crockery, and brass ware. The trade is steadily improving, especially in cultivated products as compared with jungle produce, the exports during the last year amounting to more than £250,000.

The revenue and expenditure are nearly balanced, and show a slow but steady increase. For the year 1877 the revenue was 185,552 dollars, and the expenditure 15,000 dollars less.

12. *Religion and Education.*

There is a mission in Sarawak sent out by the Society for the Propagation of the Gospel. It is presided over by Dr. Chambers, Bishop of Labuan, Sarawak, and Singapore. It numbers about six members scattered over the territory. Its efforts do not appear to have been attended with marked success, the number of converts being but few. Each mission station has a school attached to it. The Sarawak Government has three Government schools—two in Kuching and one in Upper Sarawak.

13. *General Remarks on the Character and Influence of the Sarawak Government.*

"It is not too much to say that Sarawak presents one of the few remaining chances of existence to the enervated and indolent race of Malays. Under such a government, which appears to strive to impress them with a sense of their duty to the State, as well as with a feeling of self-respect, by inducing and encouraging them to take an active part in the administration of public affairs, the Malays of Sarawak ought to prosper; and they have, moreover, continually before their eyes the example of the misgovernment and anarchy existing in the wretched kingdom of Borneo proper, which is apparently hastening to ruin and decay.

"The policy of the Sarawak Government appears to me to be just and equitable towards the native Dyak and other races. It may fairly be assumed to be so, if we take as a test the fact that extensive tribes of savages have been transmuted from lawless head-hunters and pirates into comparatively peaceful agriculturists. The crime of head-hunting is now scarcely known in Sarawak. Indeed, I regret to state that it appears to be more com-

mon in the territories of the Sultan than elsewhere, and two cases have been absolutely before me of head-taking within the British colony of Labuan itself, where a panic on that account existed for some time. The same remarks apply to the crime of piracy. What little piracy exists on the western coasts of Borneo is not to be found within the dominions or seaboard of Sarawak. It is rather to be looked for in the territories on the north-west coasts of Bruni within the nominal jurisdiction of the Sultan, and to a greater extent on the north-east coast.

"One of the principal recommendations attaching in the eyes of the native to European rule in Sarawak, is the honesty of its administration, especially in pecuniary matters. The object of the Malay nobles in the olden times, and indeed now in the territories of Bruni, was to squeeze as much as might be from the wretched aborigines; whereas the principal object of the European appears to them to be to solve the problem of how to carry on an effective government at the lightest possible cost to its subjects.

"Another recommendation in the eyes of the native is the possibility of obtaining even-handed if rough justice. It is not necessary, as they see and admit with satisfaction, that litigants should enter into a pecuniary competition with their opponents to purchase the favour and countenance of their judges.

"The occasions requiring the employment of armed force are becoming rare, and disturbances are strictly local. The real power of Sarawak is based upon the remembrance and gratitude due to the late Rajah Sir James Brooke, as well as upon the firm administration and even-handed justice of the present government. No one visiting Sarawak can fail to observe the respect and affection in which the present rajah and his family are held by the entire community. The fact is as noticeable among Europeans

as among the natives; and I may observe that the moderately paid but fairly efficient European staff is socially on a par with the officials of the generality of our colonies. The mode of life among the European body is quiet and unostentatious, but of hospitality there is abundance, and no visitor leaves Sarawak without pleasant reminiscences of his stay.

"A further noteworthy feature is to be found in the results obtained with so little money. It is not every government that on a yearly revenue of £40,000 would be enabled effectively to rule 25,000 square miles of territory with a population of over 200,000 souls, to keep up a respectable standing military force, to garrison and maintain fourteen forts, to pay a competent staff of European officers and native authorities, to maintain three gunboats, to protect commerce and agriculture, and generally to guarantee safety to life and property within its limits."

This authoritative statement as to the present condition of Sarawak must be highly gratifying to all friends and admirers of the late Sir James Brooke. Under the cautious phraseology of an official report, we cannot fail to see the record of a splendid and almost unexampled success in the art of government,—a success effected under difficulties far above the average, and to be estimated by a standard far truer than that of commercial development, the happiness and contentment of the entire population.

The history of the English Rajahs of Sarawak is well worthy of study by politicians and statesmen; and it opens up the great question of whether the future of the human race might not be benefited by the extension of the system here inaugurated, of the free government of small semi-barbarous states, under trained and educated English gentlemen, untrammelled by the cramping influ-

ence of official subordination, and unburthened by the dead weight of a complex governmental organisation and an elaborate system of legal and official precedents. What finer field can we imagine for the energies of young men of talent and fortune, than thus taking part in the raising of depressed races, the formation of free states, and the advancement of civilisation? And what more admirable means can be suggested of elevating such races, than the being placed under the rule of men whose one object would be to save them from oppression, misrule, and social misery, to educate them to self-government, and so enable them to grow unfettered to whatever degree of civilisation they are capable of attaining?

14. *Labuan.*

The other English settlement in Borneo—Labuan, was, as already stated, purchased by our Government of the Sultan of Borneo in 1846. It is a small island situated nearly opposite the mouth of the Bruni river, 12 miles long and 5 or 6 broad, covered with forests, and having a good harbour. There is here a valuable coal mine, the seam being 11 feet thick, worked by an English company. The population of the island in 1871 was 4898.

The chief trade is from the products of the adjacent coasts of Borneo, such as sago, beeswax, edible birds' nests, camphor, hides, rattans, tortoise-shell, and tripang. These are mostly sent to Singapore in exchange for cotton goods, hardware, opium, and other articles suitable for native consumption.

15. *Chief Towns, Islands, etc.*

The largest and most interesting town in Borneo is the native city of Bruni, situated on the river of the same name about 14 miles from its mouth. The river here

expands into a small lake with islands and mud-banks, on which, as well as on the shores of the river, the houses are built supported on posts. There are regular streets in the water, and the only communication is by boats. In these water-streets the market is held every day, the country people coming in with their produce, and buyers coming to them in their canoes. The houses are all of wood and thatch. It is a native Venice, but, as Mr. St. John says, really a "Venice of hovels." Seen from a distance, it is beautiful and picturesque, but on a near approach dirty and squalid. The river is sluggish and muddy, and the emanation from the exposed mud-banks so offensive as to tarnish the gold and silver epaulettes of uniforms to the colour of dirt. The population is variously estimated at from 25,000 to 40,000 inhabitants.

Pontianak is the next town of importance in Borneo, being the chief Dutch settlement, with a considerable number of European residents. Banjarmassing, in the south-east, is less populous.

Kuching, the capital town of Sarawak, is now a place of considerable trade, and the residence of several European merchants. When Sir James Brooke obtained the rajahship, the town had a small population. In 1848 Mr. St. John estimated it at 6000, while it has now increased to 15,000 or 20,000, doing a large trade and steadily growing in importance. It has forts, barracks, a court-house, prison, etc. The residence of the rajah is called the "Astana," and is a handsome building surrounded with tastefully laid out grounds.

There are very few islands of importance belonging to Borneo. The largest is Pulo Laut at the south-east corner, and only separated from it by a narrow strait. It is hilly, covered with forests, and inhabited by Malays.

Carimata Island, on the south-west, is about 10 miles long, and 50 miles from the coast of Borneo. It is 2000

feet high, but uninhabited, though visited by itinerant Malays, who collect tortoise-shell and tripang from the coasts, and edible birds' nests from the rocks.

The group of the Tambelan Islands lies off the western extremity of Borneo at the distance of nearly 100 miles. The largest is only about 6 miles across. They are granitic and covered with forests, and are inhabited by Malay fishermen who export cocoa-nuts, oil, and salt fish.

Off the north-western point, at a distance of nearly 150 miles, is the island of Great Natuna, with several smaller ones around it and nearer the coast. It is about 12 miles long and nearly 3000 feet high, forming a good landmark. It has mouse-deer, wild hogs, monkeys, and squirrels, as well as domestic cattle, goats, and buffaloes. It is covered with forests. The inhabitants are Malays, who cultivate a little rice and maize, and who carry fish, sago, and cocoa-nut oil to the Singapore market. Although geographically belonging to Borneo, these islands, as well as the Tambelans, are under the authority of the Sultan of Lingen, and through him under the protection of the Dutch.

The only other islands worth noting are Balambangan and Balguey, only 3 miles apart, and 10 or 12 from the north-eastern extremity of Borneo. The former is about 15, the latter 25 miles long. Balambangan was ceded to the English by the Sultan of Sooloo in 1762, and attempts were made to settle on it in 1775 and again in 1803, but it was found to be worthless, being sterile, uninhabited, and in the midst of a piratical population. These islands have since been occupied by some wandering Malays and aborigines from the adjacent coast of Borneo.

The Sooloo Islands have been already described in the chapter on the Philippine Archipelago.

CHAPTER XIX.

CELEBES.

1. *Position, Extent, and Outline.*

CELEBES is the fourth island in magnitude in the archipelago, being a little larger than Luzon, and only surpassed by Borneo, New Guinea, and Sumatra. It is situated to the east of Borneo, and has the Moluccas on the east, the Philippines on the north, and the island of Flores on the south. The equator traverses its northern portion, and it extends from $1\frac{3}{4}^{\circ}$ north, to $5\frac{3}{4}^{\circ}$ south latitude. Its shape is most peculiar and fantastic, unlike that of any other island except the much smaller Gilolo to the eastward. It consists of a central mass, from which radiate four enormous arms, forming three deep gulfs on the east side, while the west has a curved and nearly even coast-line; and the whole was likened by the Portuguese historian De Couto to a huge grasshopper. Its greatest length between the extremities of the northern and southern peninsulas is about 750 miles, their average breadth being about 60 miles. The two eastern peninsulas are shorter, but a little wider, and the total area is about 54,000 geographical square miles.

2. *Physical Features.*

Very little is known of the interior of Celebes except at its northern and southern extremities, but it is certain that each of its peninsulas is traversed by a mountain-

chain, while the central mass is probably a mountainous table-land. The extremity of the northern peninsula is the only portion where active volcanoes are known to exist, the loftiest of these, the Klabat mountain, having an altitude of over 7000 feet. At the north-western angle the Donda mountain is said to be near 10,000 feet high; and, at the extreme south, the peak of Bonthain is marked in the Dutch maps as being still higher; but its appearance from the sea does not justify such an estimate. The eastern peninsulas are the least known, but they are probably not so lofty as the northern and southern. All the peninsulas have islands at their extremities, and these are much larger and more numerous to the east, where they fringe the coasts as well as the extremities of the peninsulas. This renders it highly probable that the present form of the island is due to a depression of the eastern side, which has broken up this portion into detached islands, and submerged the great valleys, till they have become the wide gulfs that now penetrate almost to its centre.

The rivers of Celebes are necessarily small, the largest being the Sadang, which is supposed to rise in the central plateau, and enters the sea, on the west coast, a little north of Paré Paré Bay, after a course of about 160 miles. The river Chiurana, which has its mouth on the east side of the southern peninsula, north of Boni, is navigable by good-sized native vessels as far as Lake Luboya, a distance of about 20 miles. Two other lakes are said to exist in the central plateau, giving rise to rivers which flow to the east coast.

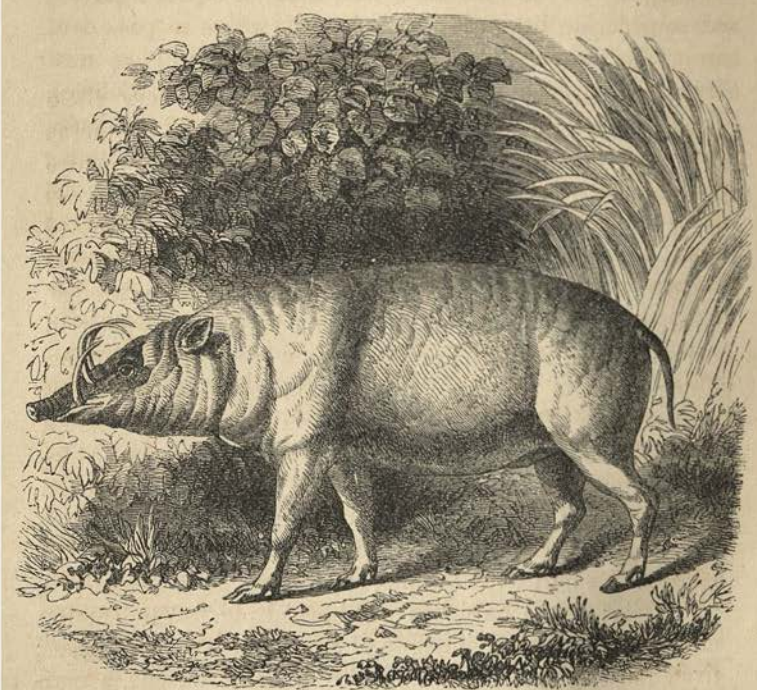
The southern peninsula has a central range of limestone and basaltic mountains, and extensive open plains, either cultivated as rice-fields, or yielding pasture for horses and cattle. The northern and central portions of the island yield much gold, and are therefore probably

granitic, while iron, tin, and copper, are said to be found in small quantities. The Gulf of Tomini or Goroptalo is the country which yields most gold, but the quantity is unknown, as it is all bought up by native Bugis traders. This country would offer a fine field for exploration to the naturalist.

3. *Natural History.*

The botany of Celebes is unfortunately very little known. It produces neither the spices of the Moluccas to the east, nor the camphor and benzoin of Borneo to the west, and the little that is known of its flora indicates that it is a distinct and peculiar one, although many of the coast plants are identical with those of the adjacent islands. Of its zoology we have much more knowledge, and we find that its animals are, considering its position in the very centre of the archipelago, wonderfully peculiar. Taking first its mammalia, we find that Celebes differs broadly from Borneo and Java in having no tailed monkeys, no insectivora, no feline or canine animals, no elephant, rhinoceros, or tapir. It has only five large, and eleven or twelve small terrestrial quadrupeds; the former are:—1, A large black tailless baboon or ape; 2, a deer; 3, a remarkable small wild buffalo, resembling an antelope; 4, a wild pig; 5, the babirusa or "horned pig." The smaller animals are,—the tarsier (one of the lemurs); a civet cat; five squirrels; two rats; and two kinds of cuscus, a marsupial opossum-like creature. These animals may be divided into three groups. Some—as the deer, the civet, and the tarsier, are identical with species of Borneo and the western islands; and, as all are kept as domestic pets by the Malays, they may have been introduced, and have escaped from captivity. Others—as the wild pig, the squirrels, and the rats, are peculiar species, but are allied to those of Borneo and Java, and thus indicate a more

distant period of immigration. Others again—as the ape, the anoa, a wild buffalo, and the babirusa, are altogether peculiar. No animals at all nearly allied to them are to be found in any of the Asiatic islands, or in fact anywhere else; and we are thus led to speculate on their



BABIRUSA.

transmission from a very remote epoch, when Celebes formed part of a continent which disappeared before the existing Asiatic islands were formed; for on any other supposition it is most difficult to understand how these singular animals should have been preserved in Celebes and nowhere else. And, lastly, we have the marsupial

Cuscus, indicating that the island has received some of its productions from the Moluccas or New Guinea, where alone these animals abound; and we have also two forest rats of the sub-genus Gymnomys, which are allied to Australian species.

Turning to the birds, we find facts of equal interest; and, considering how easy it is for this class to pass over narrow seas, even more extraordinary. There are now about 160 species of land-birds known from Celebes, belonging to 124 generic groups. About 90 of these species are peculiar to it and the small adjacent islands; while, of the remainder, about 50 come from the Asiatic and 20 from the Australian side. This is what we might expect, looking at the great extent of the opposing coasts of Borneo, which are much richer in birds than the Moluccas. The peculiar species of Celebes are generally related to birds characteristic of one side or the other, and in this way also we find the Asiatic side preponderating in the proportion of 24 to 15. But, if we look at the number of genera of land-birds, abundant in Borneo or the Moluccas, which are absent from Celebes, we find the most striking deficiency on the Bornean or Asiatic side. Thus, 8 important families, and 16 genera, which are highly characteristic of Borneo or Java, are unknown in Celebes; while, of the Moluccan groups of equal importance there are only 1 family and 12 genera absent. These remarkable deficiencies, quite as much as the species it actually possesses, stamp the character of the Celebesian fauna, and give a clue to its past history.

Taking account of both mammalia and birds, of which two groups alone we possess sufficiently detailed information, we cannot doubt the great antiquity and extreme isolation of this island from the rest of the archipelago. The three remarkable mammals,—the ape-baboon (*Cynopithecus*); the antelopean buffalo (*Anoa*), and the spiral-

tusked pig (*Babirusa*), as well as a curious bee-eater (*Meropogon*); three remarkable genera of starlings (*Basilornis, Enodes*, and *Scissirostrum*); two peculiar magpies (*Streptocitta* and *Charitornis*); and an anomalous kingfisher (*Ceycopsis*), have none of them any near allies in the archipelago, and are only remotely connected with groups now inhabiting the Asiatic or African continents. They appear, in fact, to be remnants of the Miocene fauna, at a period when the ancestors of all the chief types of both the temperate and tropical zones of the Eastern hemisphere were to be found in the Euro-Asiatic continent. The peculiarities of the animal life of Celebes may be best explained by supposing it to be an outlying portion of that Miocene continent, which became detached from it, and has since never been actually joined to any Asiatic or Australian land. It has thus preserved to us some descendants of ancient types, and these have become intermingled with such immigrants from both east and west as were enabled to establish themselves in competition with the ancient inhabitants. To the naturalist, therefore, Celebes is an island of extreme interest. It cannot be said to belong either to the eastern or the western divisions of the archipelago, but to stand almost exactly midway between them; the relic of a more ancient land, and dating from a period perhaps anterior to the separate existence of any of the islands.

The insects, although less perfectly known, offer analogous peculiarities to those presented by the higher animals. They are isolated alike from those of the Sunda Islands and the Moluccas, and present certain specialties of form and coloration not found elsewhere. The details are of too technical a nature to find a place here, but they are such as fully to confirm the general conclusion we have arrived at, as to the long-continued isolation of this remarkable country.

4. *Native Races of Celebes.*

From what has been said of the extreme antiquity of Celebes, and the peculiarity and isolation of its animals, it might be expected that some equally peculiar tribes of mankind might be found here, or even some relic of primeval man. But it must be remembered that man is pre-eminently a migrating and an aggressive animal, the higher or more energetic races constantly displacing the lower or less physically powerful; so that his present distribution may have little relation to the ancient history of the countries he inhabits. It is highly probable that a low and primitive race did once inhabit Celebes; but if so, it has completely disappeared, and the whole island is now occupied by many distinct tribes in various stages of civilisation, but all belonging to the Malayan race. They may be roughly classed into two groups—the Mahometan semi-civilised tribes, and the Pagans, who are more or less savages. The former all read and write, and mostly have peculiar alphabetic characters; they have fixed governments, regular clothing, and are considerably advanced in agriculture and the arts, being, in fact, the equals of the true Malays and the Javanese. The latter are more or less complete savages, without writing or fixed governments, usually with imperfect bark clothing, and without the arts of weaving or working metals.

The most important of the Mahometan tribes are the Bugis, the Mandars, and the Macassars. The Bugis occupy the eastern coast and a good deal of the interior of the southern peninsula, their chief town being Boni. They are governed by a Rajah, and speak a peculiar language, which they write in a peculiar character. The Mandars, speaking another language, occupy the western portion of the island, which projects out into the Straits of Macassar, north of Cape Mandar. The Macassars inhabit the

southern and western extremity of the peninsula. Their chief town, and the residence of the Rajah, is Goa, only a few miles from Macassar, the Dutch capital of Southern Celebes. The Macassar people speak a quite distinct language, and even the character in which they write it differs from that used by the Bugis. Allied people, but speaking two distinct languages, inhabit the islands of Salayer, at the extremity of the southern, and Bouton, off the end of the south-eastern peninsula. When the Portuguese first visited the island in 1525, the Mahometan religion had only just been introduced, the Macassar people being the first to adopt it; and in about a hundred years it spread over all the districts where it now prevails, the conversion having been effected by Malay and Javanese missionaries.

All the remaining inhabitants of Celebes are, or have been recently, in a state very similar to that of the Dyaks of Borneo, from some of whom, indeed, they may have been derived. They are, some of them, head-hunters, and even cannibals. Human skulls ornament the chief's houses, and, when he dies, it is necessary to obtain two fresh human skulls with which to adorn his grave. Some curious burying-places exist in the northern peninsula, near the village of Sawangan, which have been described by the American traveller Bickmore. These consist of what may be termed vertical coffins, consisting of solid rectangular upright stones, deeply hollowed out at the top, so as to receive the body, and covered with a roof-shaped cap-stone, adorned with rude carvings of human figures in a sitting attitude, the knees clasped by the hands. This elaborate mode of burial, if correctly described, is, I believe, unique among savage tribes. These northern people, however, are somewhat different from the Dyak-like tribes farther south, and they may have affinities with some of the indigenes of the Philip-

pines, or of the islands of Northern Polynesia. Some of them are very fair and good-looking, and, except for their moderate stature, seem to resemble the true Polynesians of the Society Islands. In the district of Minahasa they have been almost all converted to Christianity, and have become an orderly, industrious, and intelligent people. At Tomoré, on the eastern side of the central portion of the island (and probably elsewhere), the natives make bark cloth, closely resembling the "tapa" of the Polynesians. It is beaten out by wooden mallets till it becomes as thin and tough as parchment; it is then washed with an extract from some bark, which gives it a glossy surface, and renders it capable of withstanding a good shower of rain, so that it becomes a really serviceable article of clothing.

5. *Dutch Possessions and Native Kingdoms in Celebes.*

The first account obtained by Europeans of the existence of Celebes was through the Spanish author Barbosa, who travelled in the East in the early part of the sixteenth century, and who describes the inhabitants as "a fair people, naked from the waist upwards (a very common habit to this day), who come to the Moluccas to trade for spices, copper, tin, and cotfons, and who bring in exchange long swords and much gold." And he adds: "These people eat human flesh, and if the king of Molucca has a criminal to execute, they ask for him as a favour to eat, as if asking for a hog." Some years later (in 1640), De Couto gives a fuller description of "the Celebes," then supposed, very naturally, to consist of several distinct islands. He mentions the "storied houses, beautiful, but all of wood," referring to the carved Malay houses raised on posts; states that the people have cotton, iron, copper, lead, and much gold; also sandal-

wood, sapan-wood, and good cloth of silk (probably Chinese). He says they have many kinds of ships, some for war, others for trade; that the Bugis burned their dead, and collected the ashes in urns, which they buried, and over them erected temples, in which for a year they placed food, which dogs, cats, and birds carry off; and that they prayed, looking up to the skies, with their hands raised. The people of Macassar, on the other hand, buried their dead. Mr. Crawfurd thinks this shows that the Bugis had been converted to a rude form of Hinduism before they adopted the Mahometan faith.

6. *Macassar.*

The Portuguese first visited Celebes for trade in 1540, but made no permanent settlements. The Dutch did not begin to trade with the island till 1607. About thirty years later they made a treaty with the Macassars of Goa, and in 1660 conquered them, and established themselves at Macassar. Many succeeding wars have resulted in their obtaining two detached portions of territory in the southern peninsula,—one extending about forty miles north of Macassar, and about twenty-five miles inland; the other commencing just south of the Goa river, and extending round the coast to the river Tanka, on the eastern side of the peninsula, including Bonthain and the island of Salayer. These form the government of Macassar, the independent State of the Rajah of Goa having an exit to the coast between the two portions, and approaching within two or three miles of the Dutch town itself. The population of this government, which includes Salayer and the islands near it, was estimated in 1868 at 324,270. The town of Macassar is neat and well laid out, with straight streets, kept clean by means of narrow canals, into which the tidal waters are admitted at high tide, and allowed to run out at low water. It has about

200 European inhabitants, and a large population of natives, as well as many Chinese and Javanese. It has been made a free port, and is a place of much trade, being the emporium of many of the native vessels which trade to the Aru Islands and New Guinea. The district produces abundance of rice, and in the hilly country of Bonthain, coffee, tobacco, and indigo. Cotton is also grown, and the Macassar and Bugis women make "sarongs," which, for durability and permanence of colour, are unrivalled, and are highly esteemed over the whole archipelago. These sarongs are a kind of skirt universally worn by Malays of both sexes; they are often ornamented with stripes of silk or gold thread, and then fetch very high prices.

7. *Native States.*

The southern peninsula of Celebes is divided into nine native Mahometan States, which form a kind of Bugis confederacy, and are in alliance with the Dutch. The names of these States are, Goa, Boni, Lamoru, Mario, Tanette, Sopeng, Wadjo, Adja Tamparang, and Masenreng Bulu. To the north-west of these is a smaller Mandar confederacy of seven States, only partly Mahometan, named Balanipa, Madjene, Binoang, Pembuang, Chinrana, Tampalang, and Mamudjo. These Mandar people are energetic tripang fishers and traders, and their country produces edible birds'-nests and some gold. Beyond these again are the unknown Toradjas of the very heart of Celebes.

The large islands of Bouton and Moona are inhabited by Mahometans with a peculiar language, and ruled over by a Sultan, whose dominions extend over many adjacent islands and over a part of the south-east peninsula. Beyond this the country and people are almost wholly unknown, till we come to the districts north and

south of the Gulf of Tomoré, which with the Peling, Bungai, and Sulla or Xulla Islands, are under the supervision of the Dutch, and belong nominally to the Sultan of Ternate. The people are all of Malayan race, usually called Alfuros by the Dutch, a word which it is well to explain is not applied to any particular race, but is nearly equivalent to our term "Indians" as applied to all the uncivilised peoples of North and South America. In like manner the north coast of the north-eastern peninsula is under the supervision of the Dutch Resident at Menado, to which district we now come.

8. *Menado.*

The northern peninsula of Celebes constitutes the Dutch Residency of Menado. This consists of the volcanic region of Minahassa, about 70 miles long, and an extensive district beyond, forming the Assistant-Residency of Gorontalo. The whole of this country was formerly tributary to the Sultan of Ternate, and was inhabited by numerous savage tribes whose habits have already been described. When the Portuguese were expelled in 1677, it was taken possession of by the Dutch, and many of the natives were converted to Christianity. The country, however, did not begin to progress much till 1822, when it was found that the elevated plateau of the interior was admirably adapted to the growth of coffee. Native instructors in the art of coffee cultivation were brought from Java, the native chiefs, under the title of Majors, were induced to encourage the formation of plantations by a grant of five per cent of the produce, and a fixed price was paid for all properly cleaned coffee brought to the Government warehouses. European superintendents of the plantations, called "Controleurs," were appointed to each district, good roads were made, the villages were gradually

improved, schools and churches built, till, at the present day, this part of Celebes has become a perfect garden. In many of the villages the streets are bordered with hedges of roses, which thrive admirably at from 2000 to 3000 feet elevation, and are in perpetual bloom; the cottages are symmetrically arranged, nicely painted, and embowered in coffee shrubs and fruit trees; while the people are all well dressed and well fed, well behaved and contented, presenting a marvellous contrast to the naked savages of fifty years back, who were the fathers and grandfathers of the present generation.[1]

A considerable portion of Minahassa is a plateau, from 2500 to 3000 feet above the sea, with mountains rising to 6000 feet or more. In its centre is the lake of Tondano, about 10 miles long and 3 wide, and which was ascertained by Mr. Bickmore not to exceed 70 feet in depth. The river which flows from it forms a fine waterfall 70 feet high, and then flows through a deep gorge towards Menado. The highest village is Rurukan, 3500 feet above the sea; and here, in the month of June, the thermometer is usually 62° Fahr. in the morning, and rarely rises above 80° during the day. On this plateau oranges thrive better than in the lowlands, bearing abundance of most delicious fruit, and rice produces good crops without irrigation. The scenery is magnificent. Numerous volcanic mountains clothed with the richest vegetation lend grandeur to the prospect, and form a charming contrast to the coffee plantations, the rice fields, the gardens, and the neat cottages that everywhere meet the eye. Here, too, are many interesting natural phenomena. There are eleven volcanoes, several of which have been in eruption during the present century. There are hot

[1] For a fuller account of this region and its inhabitants, see Wallace's *Malay Archipelago*, chap. xvii.; and Bickmore's *East Indian Archipelago*, chap. xi.

springs, some of which throw up domes of boiling water at short intervals like miniature geysers; and there are mud-volcanoes, at one of which an Italian count lost his life may years ago, by venturing too far over the treacherous crust of hardened mud, till he sank in, and was so badly burned that he died soon afterwards. Earthquakes too, are frequent, and sometimes very violent. Recent gaps and landslips produced by them are often to be seen, but as all the houses are of wood and built on posts, they do not usually suffer much from a good shaking.

The chief towns of Minahassa are Menado and Kema, on opposite sides of the peninsula, the former used as the chief port during the eastern, and the latter during the western monsoon. They are less than twenty miles apart, and are connected by a good road. Menado is the capital town, and the place where the Resident lives. It is a small but picturesque town, and as almost every house stands in a garden and is surrounded by beautiful shrubs, trees, and flowers, it has a very charming effect as compared with the more mercantile appearance of Macassar. Its population is about 2500.

The population of the district has largely increased since the coffee culture has attained its present dimensions. In 1868 it was stated at 440,000, while in 1854, after a great mortality, it was said to have been less than 100,000. The number of coffee trees in 1868 was about 6,000,000; and, as fresh plantations are made every year, the number is now probably largely increased. When the trees are in their greatest perfection, they will each produce from 10 to 20 lbs. of coffee a year, but as a large proportion are young, and others old, the average yield is not much more than one pound per tree. A small quantity of cacao is grown on the lowlands, and a good deal of rice is sometimes exported, as well as cocoa-nuts

and the fibre of the gomuti-palm, which is used for cordage in native vessels.

To the west of Minahassa is Gorontalo, which extends for a length of about 150 miles. This district is mostly inhabited by native tribes under chiefs or rajahs, supervised by the Dutch Assistant-Resident, who lives at the small town and port of Gorontalo on the south coast. Most of those on the north coast are partly Mahometans, the five most important being named as follows:—Bolong-banka, Bolong-magonda, Bintoona, Kaidipan, and Bolong-hitaru. North-west of the port of Gorontalo is the lake of Limbotto, as large as that of Tondano and abounding in fish. The country, however, is not volcanic, and produces gold, which was formerly a government monopoly, but the right to work it is now commuted for a tax of five florins a house. West of Gorontalo are numerous tribes, almost all of whom are in a savage state, except on the coast, where are some settlements of Bugis and Mandars who trade with the natives of the interior.

9. *Islands belonging to Celebes.*

Beyond Menado to the north-east, and apparently in continuation of the peninsula, are a number of small islands, the chief of which are Siau, Sanguir, and Saliba-boo, terminating in the small groups of Nanoosa and Meanguis. Siau and Sanguir contain active volcanoes, and the latter was devastated, on the 2d March 1856, by a great eruption which killed 2000 people. The Dutch once had a settlement on this island, but it is now given up. The people are allied to those of the Menado district, but speak a peculiar language, which is the same in Siau and Sanguir. They wear a peculiar costume, consisting of a long robe reaching from the neck to the ankles, but this is probably only a garb of ceremony.

The Salibaboo group, sometimes also called the Talaut or Tulour islands, do not appear to be volcanic. They are inhabited by a similar race to the last, speaking a distinct though allied language. These people grow yams, sweet potatoes, and cocoa-nuts, and have abundance of hogs, goats, and fowls, with which they supply the wants of ships, as they are conveniently situated for vessels passing through the Molucca passage to China.

Due east of Celebes, beyond the islands of Peling and Bungay, are the Sulla or Xulla group, consisting of two large islands stretching in an east and west direction for about 100 miles, divided only by a narrow strait about the centre, with smaller islands to the east and south. The western island, named Sulla Taliabo, is inhabited by a race allied to those of the eastern peninsula of Celebes and the island of Bungay; the others appear to have no indigenes but to be colonised by the Malays from Ternate with their Papuan slaves, which has given rise to the report that these islands were inhabited by a people of Papuan race. The whole group is nominally subject to Ternate, but both geographically and zoologically the islands belong to Celebes. They are inhabited by babirusas and deer, while their birds, which are tolerably well known, resemble those of Celebes much more closely than they do those of the Moluccas.

Farther south we come to the large islands of Bouton and Moona, with the smaller Wowoni and Kambena, beyond which stretch eastward the group of small islets called the Tokong Besi, or Blacksmith Isles. All these are mountainous, and but little known, and inhabited, as already stated, by Mahometan Malays speaking a peculiar language.

The island of Salayer, off the southern point of Celebes and about forty miles long, with an extensive group of islets stretching for a hundred miles farther to the south-

east, complete the enumeration of the islands of any importance belonging to Celebes. The whole west coast after leaving Macassar, for a distance of more than 400 miles, presents not a single island of the slighest importance. A deep sea everywhere approaches close to the shore, and probably indicates that on this side the land has undergone little change, either of elevation or of subsidence, for a very long period.

CHAPTER XX.

THE MOLUCCAS.

1. *Position, Size, etc.*

THE term Moluccas, or Maluco Islands, was originally applied to the five small islands situated on the west side of Gilolo, in which alone the precious clove was produced. Now, it is extended so as to include almost all the islands which lie directly between Celebes and New Guinea. The three large islands which are considered to form the most important portion of the Moluccan group are Gilolo, Ceram, and Bouru; but between and around these are a vast number of islands of various sizes, so connecting the Moluccas with the New Guinea and Timor groups that it is very difficult to define accurately what islands should be included in the one or the other.

As we have already considered the Sanguir and Salibaboo islands to be extensions of Celebes, we have no difficulty in fixing on Morty or Morotai, to the north of Gilolo, as being the first island of the group in this direction. In like manner, having taken the Sulla islands as belonging to Celebes, we have the Batchian group, Obi, and Bouru as the western limits of the Moluccas. To the east there is more difficulty. Waigiou and Mysol are inhabited by true mop-headed Papuans, and by birds-of-paradise, and therefore undoubtedly belong to New Guinea, with which country, moreover, they are connected by a shallow sea-bottom. It will be well, therefore, to take the 100-fathom line as the boundary of the Papuan group,

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and we shall thus have the small group of Siang, Guebe, Gag, and Pope as belonging to the Moluccas. Beyond the east end of Ceram we have a number of small islands leading on to the Ké group; and as these agree with all the other islands we have been considering, in being forest-clad, while their productions ally them more to Ceram and Banda than to the Aru Islands, we shall take these as the farthest extension of the Moluccan group to the south-east. It is true that the Tenimber islands and Timor Laut are not much farther to the south, but these begin to be bare of forest, and thus belong naturally to the comparatively arid Timor group. Thus limited, the Moluccas extend about 600 miles from north to south, and about 550 from east to west, but they fall naturally into two subdivisions—that of Gilolo on the north, and that of Bouru and Ceram on the south. Situated on both sides of the equator, and far enough removed from Australia to be unaffected by the arid winds which blow from it, these islands are all clothed with a magnificent vegetation, and enjoy a climate which, by its equability of temperature, combined with moisture, and tempered by perpetual breezes, is perhaps unsurpassed in any part of the tropics.

2. *Geology and Natural History.*

The great volcanic belt passes through the whole length of the Moluccas, and gives them their distinctive character, yet several of the islands are entirely without volcanoes, either active or extinct, and some appear to be wholly non-volcanic in structure. Beginning with Banda on the south, the line of volcanic action passes through Amboyna to Bouru, where a volcano is said to exist in the western part; it then turns northward through Batchian, where there are boiling springs, to the line of active volcanoes from Makian to the northern extremity of

Gilolo, where Mount Karakan is an active volcano. In the vicinity of the volcanic districts there are usually abundant signs of upheaval, in the form of raised coral reefs or masses of coral limestone far inland. At the extreme north, the island of Morty is coralline and volcanic; but has no volcano. The centre and most of the southern peninsula of Gilolo is composed largely of coral rock. At Amboyna we find a base of crystalline rocks, with abundance of coralline limestone, forming hills of considerable elevation and very rugged, the hollows being filled with red clayey earth, probably decomposed volcanic ashes. Farther east the small islands of Goram, Manowolko, and Matabello, consist wholly of coral reefs raised to a considerable height, while Great Ké island is also very largely composed of the same rock. The large island of Ceram, however, appears to offer a contrast to the rest of the Moluccas. No volcanoes are known in it, and the rocks, so far as observed, appear to be ancient stratified deposits of a highly crystalline character, though limestone occurs at its eastern extremity. The great central mountain, Nusa Heli, is said to be near 10,000 feet high, but no European has ever visited it.

The vegetation of the Moluccas is exceedingly rich and varied, and would well repay systematic exploration. Here is the native country of the most precious of spices, the clove; and there are also wild nutmegs, cardamoms, the kanary nut, and the cajuput-oil tree. Palms and pandani are very abundant, dammar pines grow in the forests, while ferns, creepers, and flowering shrubs in endless variety clothe the forest glades and the rocky beaches with exquisite drapery.

The animal life is much better known, and enables us to decide that it belongs generally to the Australian type, and more particularly resembles the fauna of New Guinea. A few of the Asiatic forms of mammalia, re-

sembling those of the western islands, are still found here; such as the deer, which abound in all the larger islands, and even in several of the smaller ones, since they occur in Ternate and Tidore, in Banda, and in Ceram Laut. The species is almost, if not quite, identical with one common in all the great Malay islands, and it may very well have been introduced by the Malay colonists. None of the islands have any monkeys, except Batchian, in which is found the tailless baboon-ape of Celebes; while in Bouru alone is found the babirusa, another of the peculiar forms of that island. Pigs are abundant in all the islands, and some of them are believed to be peculiar species. The only carnivorous animal is the common civet-cat (*Viverra tangalunga*); and as the Malays often keep these creatures for the purpose of obtaining the perfume, of which they are very fond, it has probably been introduced by them. The only other quadrupeds are bats, which are abundant, a shrew, and several marsupials of the genus Cuscus, as well as a small flying-opossum resembling those found in Australia. If, therefore, we leave out of the list those species which there is reason to think may have been introduced by man, we find an excessive poverty of mammals, hardly to be equalled anywhere else in the world under similar conditions.

Birds, on the other hand, are tolerably abundant, and are in many respects interesting. Their essentially Papuan character is indicated by the fact that out of the 78 genera in which the Moluccan land-birds are classed, no less than 70 are characteristic of New Guinea, while only six are peculiarly Indo-Malayan. The species, however, are to a great extent peculiar, more than 140 being entirely confined to these islands out of a total number of about 200 land-birds. A most remarkable feature is the immense preponderance of the three groups—parrots, pigeons, and kingfishers. These together form *one-third*

of all the land birds, while in continental India they only form one-twentieth. As these groups are rather above the average of size, and contain an unusual proportion of gaily-coloured species, they give to the birds of the Moluccas an air of special brilliancy. Among the most beautiful are the crimson lories, the racket-tailed kingfishers, and the green fruit-doves; and there are also some brilliant ground-thrushes and fly-catchers. In the islands of Batchian and Gilolo there is a peculiar genus of the bird-of-paradise family, the only one yet found beyond the Papuan islands and North Australia.[1] Very curious, too, is the occurrence of the great wingless bird, the Cassowary, in Ceram, distinct from the numerous species that inhabit New Guinea and the adjacent islands. The mound-building birds of the genus Megapodius are especially abundant in the Moluccas, being found even on the smallest islands and uninhabited islets.

Equally splendid as the birds are the insects of these islands, which in some particulars surpass those of any other part of the world. Here are butterflies of the largest size and most vivid colours—some, of the most intense metallic blue, as *Papilio ulysses*, or the richest silky green, as in *Ornithoptera priamus;* while others exhibit golden yellow or the most vivid crimson hues, displayed in an endless variety of patterns on a velvety black ground. The beetles also are remarkable for size or beauty, the wonderful long-armed beetle of Amboyna (*Euchirus longimanus*) being one of the giants of the insect world.

3. *Inhabitants.*

In the Moluccas two, if not three, native races en-

[1] This bird has been named *Semioptera wallacei*, or "Wallace's Standard Wing," after its discoverer. See *The Malay Archipelago*, p. 220.

counter each other and intermingle—the Malays, the Papuans, and perhaps the Polynesians; and with the very imperfect knowledge we at present possess, it is not always easy to disentangle the one from the other, or to determine which are pure races and which the results of a more or less complex intermixture. People of Malay race and Mahometans in religion, inhabit the small islands of Ternate and Tidore, each under a native sultan, whose rule extends over a number of adjacent islands. They speak distinct but closely-allied languages, which are widely different from any of the western Malay tongues, and are probably compounded of some aboriginal dialects spoken by the indigenes and that of their conquerors. These are the most important of the Malay States of the Moluccas, but other tribes with a great variety of languages are found on the coasts of Ceram and in the smaller islands of Goram, while tribes of pagan Malays in a lower state of civilisation inhabit parts of Bouru. The great island of Ceram, however, is inhabited by people who are undoubtedly of Papuan race, have frizzled hair and prominent features, with a darker skin and more lengthy limbs than the Malays. They are utter savages and head-hunters. Most of them are still in a state of absolute freedom in the mountains of the interior, but some have been collected in villages on the coast, and have become converted nominally to Christianity, while others are equally nominal Mahometans. In Bouru occurs a similar race, and also in the southern and central parts of Gilolo; but in the northern peninsula of that island, and having their head-quarters at Galela, near Mount Karakan, there is a very interesting race, as light in colour as Malays, or even lighter, but tall and well made, with handsome prominent features, curly hair, and bearded. They resemble Polynesians in many respects, and may perhaps be a Polynesian colony intermixed with the

Papuan aborigines, but they speak a highly peculiar language. They are good boat-builders, and wander all over the northern part of the Moluccas, collecting tripang and turtle-shell, hunting deer and pigs, and smoking the meat. They also make settlements on any uninhabited spot that suits them, cut down the forest, plant maize or rice, and seem altogether a more enterprising and energetic people than those around them.

Besides these, we have in all the chief towns of the Moluccas a number of the descendants of the early Portuguese settlers. These go by the name of "Orang sirani," or Nazarenes. They speak Malay with a considerable intermixture of Portuguese words, but owing to their having been under Dutch rule for several centuries they have become Protestants, and are altogether ignorant of their own origin.

In addition to these sources of ethnological confusion, we must remember that slavery has long prevailed in these islands, and that, as already stated, by means of the piratical fleets slaves have been brought from the remotest parts of the archipelago. The Ternate and Goram people are great traders to New Guinea, and Papuan slaves are very common. Again, we have everywhere a considerable number of Chinese, and a smaller number of Arab merchants, who all have native wives. After the first discovery of the Spice Islands by the Portuguese, for more than a century, the ships of all nations—Spanish, Dutch, and English especially—crowded into the eastern seas to obtain a share in the traffic in spices, which was in those days as alluring as the search after gold, and even more profitable. Among the crews of these vessels there would be men of every race, and many of them would become temporary and some permanent settlers in these sunny isles, and leave behind them descendants who would add to the diversity of type among the apparently native races, which is here so puzzling.

4. *Ternate and the Gilolo Group.*

The island of Gilolo, called by the natives Halmaheira, has a fantastic shape, very much resembling that of Celebes, both islands consisting of four peninsulas radiating from a comparatively small central mass, and divided by three deep gulfs on the eastern side. It is mountainous and rugged; many of the mountains resemble volcanic cones, and it has at least one active volcano. Around it are grouped a number of smaller islands which have all the appearance of having been once connected with it. Parallel with its western coast, at a distance of eight or ten miles, are a range of small islands, three of which —Ternate, Tidore, and Makian—are true volcanoes; while the two islands between Tidore and Makian are formed of upraised volcanic materials, and the Kaioa Islands, south of Makian, are an upheaved coral reef. Farther south is the comparatively large island of Batchian, with a group of adjacent islets. Here we have no active volcano, and comparatively little volcanic formations, but ancient stratified rocks, with coal, copper, and gold. All the islands, from Ternate to Batchian, are inhabited by Mahometan Malays, each with their peculiar language—the island of Makian having two. Batchian is ruled by a native sultan, but he is under the authority of the Dutch Resident at Ternate. There are no wild tribes in Batchian, and the island of Obi, farther south, is quite uninhabited. The southern peninsula of Gilolo is also without wild indigenes, so that it would seem as if the Malays on their eastern, and the Papuans on their western, extension, had here met on unoccupied ground.

The small town of Ternate, the seat of the Dutch government over the Northern Moluccas, is situated at the foot of a fine volcanic cone about 4000 feet high, which constantly emits vapour, and which has had fourteen

eruptions since Europeans have occupied the country. A few miles to the east, a black, scoriaceous, rugged tract, covered with a scanty vegetation, and called by the natives "Batu-angas" (burnt rock), marks the lava stream which descended to the sea during a great eruption about a century ago. The situation of the town is picturesque, with grand views on every side. In front is the rugged promontory of Tidore, backed by a most beautiful volcanic cone, rising in almost perfect symmetry to about the same height as that of Ternate itself; to the east is the long mountainous coast of Gilolo, terminating towards the north by a group of three lofty volcanic peaks; while immediately behind the town rises the huge mountain, sloping very gradually at first, and covered with thick groves of fruit trees, but soon becoming steeper, and furrowed with deep gullies. Almost to the summit it is covered with vegetation, and looks calm and beautiful, although beneath are slumbering the fires that occasionally burst forth in lava-streams, or more frequently make their existence known by devastating earthquakes, which generally accompany eruptions of the volcano.

The last great earthquake was on February 2, 1840, at midnight, during the festival of the Chinese New Year, a circumstance which prevented much loss of life, because everybody was up feasting, and seeing the processions and amusements. The shocks continued all night and part of the next day, throwing down every stone building, and more or less wrecking almost all the rest; and they did not wholly cease for a fortnight. Earth-waves moved along the streets, like rollers on the sea, the earth opening and closing again; but the line of disturbance was very narrow, the native town, a mile to the east, not suffering at all. It travelled from north to south through the islands of Tidore and Makian to Batchian, reaching the latter place, 100 miles distant, at four in the afternoon of

the following day, so that the wave was propagated at the rate of only six miles an hour. Everywhere in the suburbs of the town may be seen ruined walls, and gate-pillars with the stones twisted on each other, and the remains of massive stone and brick buildings, gateways, and arches, showing the greater magnificence of the old town, till sad experience taught the superiority of wood and thatch as building materials in an earthquake-tortured country.

The Dutch hold absolute possession of the island of Ternate, though they allow the Malay Sultan to retain a certain amount of authority over his own people. The adjacent island of Tidore being entirely inhabited by Malays, the Sultan is somewhat more independent. The great island of Gilolo is divided between the Sultans of Ternate and Tidore in a peculiar way, the whole of the northern peninsula, with the island of Morty, and the southern half of the southern peninsula, being under the jurisdiction of the former, the remainder under the latter, who also claims authority over all the islands eastward to New Guinea.

Tidore is a larger island than Ternate, and its volcano has not been in eruption within the memory of man. Motir is a smaller island, of rugged volcanic hills consisting of black basaltic rock and conglomerate, and surrounded by fringing coral reefs. The next island, Makian, had also once a fine cone, and was thought to be extinct, but in 1646 a great eruption blew it up, leaving a vast crater, with a huge rugged chasm on one side of it, and destroying the greater part of the population. Then for two centuries it was quiet, the people who had escaped came back, houses were built, and twelve villages were formed on its shores. But on December 29, 1862, it again burst forth with as great violence as before, and destroyed nearly the whole population. The sand and

ashes thrown up by the volcano reached Ternate, thirty miles off, the next day, and formed a cloud so dense as to darken the air, and make it necessary to light lamps at midday. They fell to the thickness of three or four inches over that island, and even to a distance of fifty miles, destroying all the crops, and doing great injury to shrubs and fruit trees.

Ternate is the port which absorbs all the trade of the northern Moluccas and the coasts of New Guinea. This consists chiefly of tortoise-shell, tripang, beeswax, massoi-bark, and birds-of-paradise. The latter were formerly an important article of trade, about a thousand pounds' worth being exported to China in 1836; but they are now less esteemed. Massoi-bark is obtained in New Guinea, and is exported chiefly to Java, where an aromatic oil is extracted from it, said to be of great value in rheumatic disorders. Cloves, the ancient product of the true "Molucca Islands" (Ternate, Tidore, Motir, Makian, and Batchian), now form no part of their commerce, the trees having been almost extirpated by the early Dutch rulers, in order to secure the monopoly of so valuable a product, which they endeavoured to do by restricting its cultivation to the island of Amboyna, of which they had exclusive possession.

The population of Ternate is about 9000. Of these only 100 are Europeans, 300 descendants of the Portuguese and natives, 200 Arabs, and 400 Chinese, the remainder being Malays of this and surrounding islands.

5. *Amboyna and the Ceram Group.*

Ceram is a large but comparatively little known island, situated, with Bouru, on a line between Celebes and New Guinea. It is about 200 miles long, with an average width of thirty-five miles, of a tolerably regular elongate

shape, but with two deep bays, nearly opposite each other, in its western half, reducing the width to less than twenty miles. At this place a native path crosses the island, passing along the bed of torrents, and over several

NATIVE OF CERAM.

mountain spurs, and this is almost the only part of the interior that is known to Europeans. The whole island is very mountainous, and is everywhere covered with a dense forest. In all the swampy valleys the sago palm grows wild, and supplies the chief food of the inhabitants, as well as an article of trade, sago cakes being the provision with which all native boats are supplied for a voyage. All along the coast, at irregular distances from each other,

are small villages of Mahometans or Christians, while the interior is peopled by scattered tribes of savages, whose villages have rarely been visited even by the Dutch officials. The only place of any importance on the north coast is Wahai, where there is a small fort, and where a European officer and a superintendent of the north coast of Ceram usually reside. The people of Ceram are generally poor, little trade is carried on, and the abundance of sago gives the inhabitants no inducement to cultivate the soil. There is hardly any part of the East where the traveller finds it so difficult to procure the usual tropical fruits or vegetables or any food fit for the consumption of civilised beings.

6. *Bouru.*

Bouru, situated to the west of Ceram, with a few intervening islands, is of an oval shape, being about half as long as Ceram, and about the same width, with all the appearance of having once been connected with it. The northern part of Bouru is very sterile, consisting of gravelly hills, with a scanty vegetation of wiry grass and small trees of the Melaleuca, which produces the celebrated cajuput oil. The southern part is said to be more forest-clad. The inhabitants consist of two races. A tribe of mild, light-coloured people of Malay type, and apparently allied to the natives of Eastern Celebes, occupy the northern portion; while, on the south, are a race of Papuan type, and probably allied to the savage races of Ceram. The villages round the coast are inhabited by semi-civilised Mahometans, who are probably a more or less mixed race, the Malays of Ternate, Amboyna, and Celebes, who have settled there having often obtained wives from among the aborigines of the island. At Cajeli is a Dutch fort, with a Commandante and Controleur, under the supervision of the Resident of Amboyna.

7. *Amboyna.*

Amboyna is an island about 30 miles long and 10 or 12 wide, situated to the south of the west end of Ceram, from the extreme point of which it is only 7 miles distant. It is almost divided into two unequal parts by deep inlets, leaving a narrow sandy isthmus about a mile wide. By means of an artificial cut this has been reduced to about 30 yards, so that native canoes can easily be dragged over. The cut is not completed, because every year just such a bank as now exists would be thrown up by the force of the spring tides and the south-east monsoon. The city of Amboyna, the capital of the Moluccas, is situated on the south side of the western inlet about ten miles from the sea. It is one of the oldest settlements in the East, and is a delightfully rural place, consisting mainly of sandy roads at right angles to each other, bordered by hedges of flowering shrubs, and enclosing elegant European houses or lowly native huts, alike embosomed in groves of fruit trees and overshadowed by graceful palms. Hills and mountains form the background in almost every direction, and the luxuriance and beauty of tropical vegetation can rarely be seen to greater advantage. The island was originally one vast unbroken forest, and is so still except around the town, where much ground appears to have been cultivated, and is now mostly overrun with bushes of melastoma and other shrubs. In the north-west of the island is a volcano, which has been in eruption many times between 1674 and 1824, but since that date it has been so completely quiescent that most of the inhabitants will not believe that any volcano exists. They are supported in this opinion by the fact that no one now knows exactly where it is, there being no lofty cone, and nothing to distinguish it at a distance from the forest-clad hills which surround it. Neither is Amboyna now

much subject to earthquakes, although many have occurred, and may any day occur again. While Dampier was here in 1705 there was a great earthquake, which lasted two days and did great mischief, the ground bursting open in many places, and swallowing up entire families in their houses. The ground swelled like a wave of the sea, and the massive walls of the fort were rent asunder in several places.

The inhabitants of the island of Amboyna appear to be a mixed race, formed of Moluccan Malays and indigenous Ceramese. They inhabit a number of villages round the coast, speaking several distinct languages, and are either Mahometans or Christians. In the suburbs of the city of Amboyna there is a village of Mahometan Malays speaking a peculiar language. There are also a considerable number of descendants of Portuguese as in Ternate, and many Chinese and Arabs. The population in 1865 was about 14,000.

East of Amboyna are three smaller islands—Haruka, Saparua, and Nusa Laut. The inhabitants are similar to those of Amboyna, but the Christians are much more numerous than the Mahometans. The fact that they have been peopled from the opposite coasts of Ceram is proved by the people of Saparua still speaking a Ceramese language. These three islands, with Amboyna, contain the celebrated clove gardens of the Dutch Government. For many years the monopoly yielded a large revenue, but in the present century it has ceased to be profitable, and has even resulted in an annual loss to the Government. The tree is now going out of cultivation, and the monopoly has been altogether given up, a tax being substituted for the labour formerly required in the clove gardens.

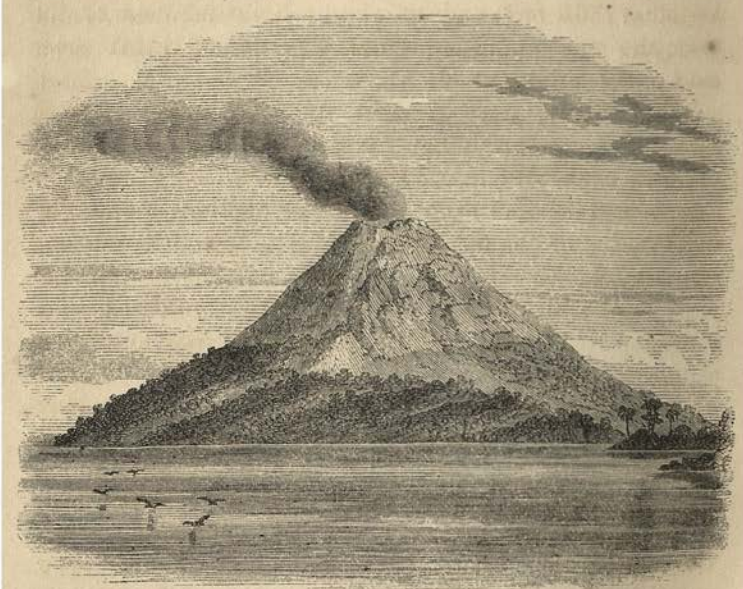
Amboyna is celebrated for its shells, collections of which have been made by the natives ever since the days

of Rumphius nearly two centuries ago, and there is, perhaps, no one locality in the world where so many beautiful varieties are to be easily obtained. In almost every other department of natural history the island is equally rich, and it may be described as a very naturalist's paradise. Some of the handsomest butterflies in the world fly about the streets of Amboyna itself, while within a few miles some of the rarest and most beautiful birds and insects of the Moluccan fauna can be obtained. The waters of the inlet above the city offer one of the most beautiful and interesting sights to a naturalist. On a fine still day when the water is unruffled, the bottom may be seen completely covered with a varied growth of corals, sponges, actiniæ, and other marine productions, forming a water garden of exquisite beauty. The bottom is uneven and rocky, forming hills and valleys, caverns and precipices, amid which are to be seen fishes, blue, red, and yellow, spotted, banded, and striped in the most eccentric patterns, and taking the place of butterflies in these submarine gardens.

The celebrated Amboyna wood, formerly much esteemed for making desks and other small articles of cabinet work, is obtained from the knotty protuberances formed on certain forest trees which grow in the island of Ceram. The true seedless bread-fruit, very rarely found out of the Pacific islands, grows in Amboyna and the adjacent isles. The trade of Amboyna is not large, as most of the Bugis who visit New Guinea and the remoter islands now carry their produce direct to Macassar, or even to Singapore. Numbers of small native vessels, however, continually visit it, bringing the produce of the surrounding coasts and islands, such as cloves, cajuput oil, nutmegs, ornamental woods, with some cacao, cocoa-nuts, tobacco, and a few other articles.

8. *Banda.*

The Banda group, though small in extent, is important as having long been the exclusive nutmeg-garden of the world, and it is still the place where this beautiful tree grows in the greatest perfection. It consists of three islands and two small islets, situated about 60 miles south



BANDA VOLCANO.

of Ceram and 130 miles from Amboyna. There are also three small islets about 20 miles off in a south-west and north-west direction. The "Gunong Api" or volcano of Banda is a nearly perfect cone, about a mile and a half in diameter and 2300 feet high. To the east of this is Banda Neira, about a quarter of a mile distant, and curved towards the volcano as if once forming part of it. To the south and east is Great Banda, about 7 miles long

and 1 to 2 miles wide, and with the small islands of Pulo Pisang and Pulo Kapal forming a semicircle enclosing the other two in its embrace, and having all the appearance of having once formed the outer rim of a gigantic crater. The volcano is a heap of ashes, scoriæ, and sulphur. Banda Neira contains the Dutch town and fort, behind which is a precipitous hill crowned by a flagstaff at a height of 850 feet, and offering a beautiful view of the town, the volcano, and the nutmeg-gardens which cover most of the larger island.

The nutmeg trees are here grown, as they grow in their native forests, under the shade of lofty forest trees, the tree used here being the kanary, which grows to a great height, and whose nuts produce a valuable oil. The light volcanic soil, the partial shade, and the constant moisture of these islands, where it rains more or less every month in the year, seem highly favourable to the nutmeg tree, which here reaches a large size, produces abundance of fruit, and is quite free from those diseases which have led to the abandonment of nutmeg-growing in Singapore. The nutmeg tree was a native of Banda, and man's cultivation has followed the method of nature, without attempting to force her to an unduly rapid production. The number of trees on the islands is about half a million, and they produce annually about 600,000 pounds of nutmegs and 140,000 pounds of mace; yet, even with all these advantages, the possession of this monopoly is no longer profitable, and it will soon be entirely given up.

Eruptions and earthquakes are very numerous in Banda, and are often very destructive. During the last three centuries eruptions are recorded at thirteen distinct periods, some of them lasting several months, and being generally accompanied by destructive earthquakes. On six occasions, earthquakes have happened unaccompanied by

eruptions, the last great one being in 1852, when a wave swept over the islands destroying many acres of the nutmeg plantations. In 1690 and 1691 there was a succession of eruptions and earthquakes, which so devastated the place that many of the inhabitants emigrated to Amboyna and Celebes to escape destruction.

The inhabitants of Banda when first visited by Europeans were Mahometans, and probably allied to the Malays of the other Moluccan islands. During the Portuguese and Dutch occupation, however, first slaves and then convicts have been introduced to cultivate the nutmeg parks, and the inhabitants are now a miscellaneous assemblage of all the races who are found in the far east.

Deer and pigs are found on Banda, as well as one of the curious marsupials of the genus Cuscus. Birds are tolerably numerous, and among them are several species quite peculiar to these small islands—an indication of their long isolation and antiquity.

9. *Islands east of Ceram.*

Eastward of Ceram are a number of small islands forming a series of stepping-stones to the more important Ké group. First we have Kwammen and Kessing close to the main island, and a little further, but still connected by shoals and islets, Ceram Laut. Between them is the curious little aquatic village of Kilwara, built around a small sandbank, the houses standing on piles half in the water and quite concealing the land, so as to give the place a most singular appearance from a distance. It is chiefly inhabited by Bugis traders, and is one of the emporiums of the far east where all the articles of native trade can be bought and sold.

About thirty miles farther on we come to the Goram group, consisting of the two islands of Goram and Mano-

wolko, and the smaller island of Suruaki. These are governed by a native rajah, and the inhabitants are generally known as Goram men. They are Mahometans of Malay type, with a slight infusion of Papuan blood, and speaking a peculiar language, and are probably derived from a mixture of Bugis with Moluccan Malays. They are a race of traders, making voyages every year to the Ké and Aru islands, and to New Guinea, selling their produce to Bugis traders, who take it to Macassar or Singapore. These islands consist of raised coral reefs, with cliffs and terraces rising two or three hundred feet high. In Manowolko there are no streams, but there are some in Goram, which probably has a substratum of harder rock. Goram is surrounded by an encircling reef, entirely under water except at the lowest ebb tide, but affording excellent anchorage and smooth water within.

Twenty miles farther to the south-east are the small Matabello islands, of coral rock raised to a considerable height, and with a closely encircling reef leaving a narrow but secure passage for native boats within it. The rugged hills of these islands are covered with cocoa-nut trees, and the natives get their living by making cocoa-nut oil, which they sell to the Bugis traders. The only water here is obtained from a few small wells near the beach; and as the people live high up on the hills they rarely, if ever, use water for any purpose but for drinking. They are brown Papuans with frizzly hair, and are pagans, but from much association with the Bugis and Goram traders, have obtained some small tincture of Mahometanism.

About fifteen miles south of Matabello is Teor, a high rocky island, inhabited by a race of tall brown Papuans, who speak a language with resemblances to those of Matabello and of Ké.

10. *The Ké Islands.*

From Teor, a stretch of 80 miles, only broken by a few small islets, brings us to the Ké islands—Ké Har, or Great Ké, more than 50 miles long, narrow, and mountainous, and Ké Doulan, or Little Ké, shorter and broader, much less elevated, and with an almost level surface. The Ké islands are covered with magnificent forests, and they are inhabited by two distinct races—the indigenes, who are genuine black mop-headed Papuans, and a Mahometan people of mixed blood, who are said to have emigrated from Banda, on its being taken possession of by the Dutch. The inhabitants of Ké are wonderful boat-builders, supplying most of the traders to New Guinea and Aru with praus of various sizes. Their only tools are the axe, adze, and augur; and the vessels are built without the use of iron, the solid planks being secured together by pegs, and fastened to the internal ribs by rattans. So truly do they work, that planks 20 or 30 feet long are fitted to each other on the curved sides of a vessel, with such accuracy as to require very little caulking. Every plank is cut out of a tree with the axe, each tree producing two planks. Vessels of 30 tons burden are thus built, which are excellent sea-boats and make voyages of 2000 miles to Singapore with perfect safety, and are probably stronger than boats of a similar size built by Europeans, and fastened with iron nails. Some of these smaller boats, with high ornamented ends, are elegantly shaped, and very swift either to paddle or sail.

CHAPTER XXI.

THE TIMOR GROUP, OR LESSER SUNDA ISLANDS.

1. *Physical Description.*

FROM the east end of Java a chain of good-sized islands stretches in a straight line for about 800 miles, till it seems to be turned aside by encountering the large island of Timor, which lies somewhat obliquely to their direction, and is then continued by a series of very small islands for about 400 miles farther to the Tenimber islands, while from the eastern extremity of Timor another series extends to Timor Laut, the whole chain being more than 1200 miles in length. Between the western end of Timor and Sumbawa the islands of Rotti, Savu, and Sandalwood form a kind of loop-line to the principal chain. A volcanic belt, with many active volcanoes, runs in a direct line from Java to the east end of Timor, and then bends north and east to Banda without reaching Timor Laut, which island, with the western half of Timor and Sandalwood Island, appears to be non-volcanic.

The whole group of islands we are now considering have a very different aspect from most other parts of the Malay Archipelago, and especially from the Moluccas, being deficient in verdure, for the most part without forests, and often absolutely barren. This deficiency of forest-covering begins even in Bali, so close to luxuriant Java; and increases as we go eastward, till, on the great island of Timor, such forests as are found in Borneo and the Moluccas are quite unknown, and are only repre-

sented by dense thickets of thorny shrubs, scattered trees of eucalyptus, acacia, and sandalwood, and patches of more luxuriant woods in some of the moister ravines. The country, in fact, resembles Australia much more than the Moluccas. The purely volcanic islands near Timor, of which Wetter is an example, are bare in the extreme, reminding the traveller more of the burnt hills of Aden than the luxuriant vegetation of the Spice Islands. We can hardly err in tracing this remarkable aridity to the vicinity of the heated interior of Australia, directly to the south-east of the islands of this group. It is well known that this arid continent exercises a disturbing effect on the meteorology of all the surrounding countries, diverting the monsoons from their due course, and by its ascending currents of heated air preventing the deposition of moisture that would otherwise take place.

2. *Natural History.*

The island of Bali is connected with Java by a very shallow sea, and has no doubt once formed part of that island, with which its vegetable and animal productions closely correspond. The strait separating Bali from Lombok is, on the contrary, very deep; and directly we cross it we come among a new set of animals, and appear to have left Asia for Australia. We at once meet with those singular birds the mound-builders (Megapodiidæ), as well as friar-birds and other honeysuckers, cockatoos, and many other groups found only in the Australian region; while a large number of animals, found in every one of the Asiatic islands, suddenly disappear. We have no longer any elephants, rhinoceroses, or tigers; none of the carnivora but a common civet-cat; none of the insectivora but the small shrew; none of the numerous rodents but one or two squirrels, and even these do

not extend as far as Timor. From the great size of the latter island (300 miles long and 50 wide), we should expect that it would support a considerable number of mammalia; but if we omit the commonest of the Malay monkeys, a deer, and a civet, which have all probably been introduced, we find that it has none at all that can be called undoubted natives, except a pig, a shrew, and a species of Cuscus. The characteristic mammals of Australia are quite as much wanting as those of Asia, forcing us to conclude that, notwithstanding its large size and its comparative nearness to Australia on the one hand, and to Java through an unbroken chain of islands on the other, it has never been actually connected with either of them, or it would certainly have received some of their numerous mammalia.

Birds, having the means of passing freely over narrow arms of the sea, have not been excluded; but the fact that the forms of Java and the Moluccas are much better represented than those of Australia, leads us further to the conclusion that Timor has only for a short time approached nearer to Australia than it does now. Notwithstanding the similarity in climate and vegetation to Australia, the birds and insects of Timor more resemble those of Java, Celebes, and the Moluccas—a remarkable proof that the productions of a country do not depend so much on its physical conditions, as on facilities for immigration from surrounding countries.[1]

3. *Races of Mankind.*

This chain of islands is pretty sharply divided between the two great races of the archipelago—the Malays

[1] For a full discussion of the peculiarities of the fauna of the Timor group of islands, see Wallace's *Geographical Distribution of Animals*, vol. i. p. 422.

and Papuans; the former extending as far east as Sumbawa, while from Flores, through all the other islands, the latter prevail. The individual peculiarities of these races, and their differences in mental and physical character, in language and religion, will be best given under the heading of the several islands.

4. *Bali.*

The two islands of Bali and Lombok are the only portion of the Malay Archipelago in which the old Hindu religion still maintains itself.

Bali is about 90 statute miles in extreme length, and from 15 to 40 miles wide, with an area of about 2000 square miles. It is mountainous throughout, the main chain running from west to east in apparent continuation of that of Java. There are several active volcanoes, the highest, Gunong Agong, said to be over 11,000 feet high. Gunong Batur, which is in constant activity, is about 7000 feet high, and caused great destruction by an eruption in November 1815. Some of the smaller mountains are calcareous. Bali has many small rivers, and a number of small lakes, some at considerable elevations. They do not exceed a few miles in diameter, but are usually deep, and are probably formed either in old craters, or in depressions formed by volcanic disturbances. They are used as reservoirs to supply water for irrigation, which is largely practised, all the plains and lowlands being highly cultivated and exceedingly fertile. The population of the island was 860,000 in 1872, or 415 to the square mile, a denser population even than Java. The people are of the same race as the Javanese, and are quite undistinguishable from them in physical character. They live in villages surrounded by clay walls, and their houses have also walls of clay with a thatch of grass or

palm-leaves. Their agriculture is very perfect, and owing to the fertile volcanic soil, and the constant supply of irrigation water, their fields produce a continual succession of crops, giving the country the appearance of a vast highly cultivated garden. Rice, beans, cotton, coffee, tobacco, and hides, are exported, as well as native cotton cloths. The people are also skilful ironworkers, and with the rudest tools and appliances make admirable weapons,

THE ROYAL PALACE, BALI.

including even long-barrelled guns with flint locks, used in war and in shooting wild cattle. The Balinese speak a peculiar language, and they have a sacred tongue the same as the ancient Kawi of Java. They write in the Javanese character.

The Hindoo religion prevails throughout the whole of Bali, and the people are divided, as among the old Hindoos, into four castes—priests, soldiers, merchants, and labourers; the second order, that of soldiers, including the rajahs, gustis, and all the governing classes. The country

is divided into eight independent states, each under a rajah, but the whole island is nominally under the supervision of the Dutch Resident of Banjowangi, at the east end of Java. A Dutch official resides at Beleling on the north coast, the chief port in the island. The government is despotic, the lives and property of the subjects being at the mercy of the rulers. The burning of widows and slaves on the death of great men is still practised here, but the victims usually stab themselves before the fire is lighted. The names of the eight provinces or kingdoms of Bali are as follows:—Beleling, Karang-Asam, Klongkong, Tabanan, Bangli, Mangiri, Gyanyar, and Badong.

5. *Lombok.*

Lombok is rather larger and more compact than Bali, being of a sub-quadrangular shape, about 55 miles long by 45 broad, and with an area of 2100 square miles. The northern half is very mountainous, the southern hilly; and it is almost wholly volcanic, except on the south coast, where limestone hills occur. The Gunong Rinjani, or Peak of Lombok, in the north-eastern part of the island, is marked on the Dutch maps as more than 14,000 feet high; but it has never been ascended by any European, and this is probably an over-estimate. There are no active volcanoes in Lombok, but many extinct craters, some of which contain water and form lakes at considerable altitudes. The rivers are numerous, but all small, the chief use of them being to afford constant supplies of water for irrigation, which is applied almost as extensively as in Bali. The production of rice is enormous, and great quantities are exported, as well as a good deal of coffee, and some cotton, hides, and horses.

The inhabitants of Lombok are called Sassaks. They are a Malay race allied to the Javanese and Bugis, but

speaking a peculiar language written in the Javanese character. They are Mahometans, but about a century ago were conquered by a prince of Karang-Asam in Bali, whose descendants now rule over the whole island. A number of Balinese are settled in the capital city of Mataram, and these are all of the Hindoo religion—a solitary example of Hindoos having conquered and still keeping rule over Mahometans. Mataram is only three miles inland from Ampanam, the chief port of Lombok, which consists of four kampongs or villages, inhabited respectively by Sassaks, Balinese, Bugis, and Malays. Many whalers come here to obtain rice and provisions. The lading of ships is, however, very dangerous, owing to the heavy swell that breaks upon the steep beach, even in the calmest weather. Boats are continually upset and lives lost here, and the inhabitants often speak of the sea as a hungry monster, ever trying to devour them. When there is a little wind from the south or south-west, bringing in a swell from the Pacific, the rollers rise to an enormous height, breaking close to the beach, on which they tumble with the noise of thunder, and occasionally rushing up with such fury as to render it very dangerous to walk near the high-water mark.

The Balinese appear to govern in Lombok with some skill and moderation, but the laws are very severe, theft being punished with death, while any one found in another's yard or house at night is lawfully stabbed and his body thrown into the street, when no inquiry takes place. In the city of Mataram none but the ruling classes may ride on horseback, and every native on meeting a chief gets off his horse and sits on the ground till he has passed. Here, as in Bali, the women are the chief traders; and the market of Ampanam, held under a magnificent avenue of fig trees, is an interesting sight, where all the chief products of the country and the many races that inhabit or

frequent it are to be found collected together. A few miles inland the rajah has a park and pleasure-house called Gunong Sari, where there are handsome brick gateways with Hindoo deities in stone, resembling those of the ruined cities of Java; fish-ponds stocked with fish, which come to be fed on the striking of a gong; and deer which will come out of the woods to take bread from the visitor's hand. There are also fantastic pavilions, grotesque statues, and groves of fruit-trees,—altogether a very pretty place, though now much neglected, but still serving to show that these rajahs of Bali had once some love and admiration both for nature and art.

Mr. Crawfurd, in his *Dictionary of the Malay Archipelago*, published in 1856, gives the population, as then estimated, at 400,000, of which 380,000 were Sassaks, 20,000 Balinese, and 5000 Bugis and Malays. There are also a few Chinese, and about half a dozen Europeans. These numbers are now probably greater, but there is no means of forming any more accurate estimate of the population. Chinese copper money is the only coin current with the natives of the interior.

6. *Sumbawa.*

Crossing the straits of Allas from Lombok, only ten miles wide, we come to the much larger island of Sumbawa, which is about 160 miles long, but of a very irregular shape, being almost cut in two by the deep and wide gulf of Saleh. Its area is about 5000 square miles, or a little larger than Jamaica. The island appears to be very mountainous and almost wholly volcanic, containing many volcanic cones, both active and extinct. One of these, the volcano of Tomboro, occupies the entire extremity of the northern promontory, and its great eruption, in 1815, is one of the most dreadful recorded in history.

The following account is taken chiefly from Sir Charles Lyell's *Principles of Geology.*

The great eruption began on April 5th, was most violent on the 11th and 12th, and did not entirely cease till the following July. The sound of the explosions was heard at Bencoolen in Sumatra, a distance of over 1100 miles in one direction, and at Ternate, a distance of over 900 in a nearly opposite direction. Violent whirlwinds carried up men, horses, cattle, and whatever else came within their influence, into the air; tore up the largest trees by the roots, and covered the sea with floating timber. Many streams of lava issued from the crater and flowed in different directions to the sea, destroying everything in their course. Even more destructive were the ashes, which fell in such quantities that they broke into the Resident's house at Bima, more than 60 miles to the eastward, and rendered most of the houses in that town uninhabitable. On the west towards Java, and on the north towards Celebes, the ashes darkened the air to a distance of 300 miles, while fine ashes fell in Amboyna and Banda, more than 800 miles distant; and in such quantity at Bruni, the capital of Borneo, more than 900 miles north, that the event is remembered and used as a date-reckoner to this day. To the west of Sumbawa the sea was covered with a floating mass of fine ashes two feet thick, through which ships forced their way with difficulty. The darkness caused by the ashes in the daytime was more profound than that of the darkest nights, and this horrid pitchy gloom extended a distance of 300 miles to the westward into Java. Along the sea-coast of Sumbawa and the neighbouring islands, the sea rose suddenly to the height of from 2 to 12 feet, so that every vessel was forced from its anchorage and driven on shore. The town of Tomboro sank beneath the sea, and remained permanently 18 feet deep where there had been dry land

before. The noises, the tremors of the earth, and the fall of ashes from this eruption, extended over a circle of more than 2000 miles in diameter; and out of a population of 12,000 persons who inhabited the province of Tomboro previous to the eruption, it is said that only 26 individuals survived.

Little is known of the vegetable productions of Sumbawa, except that the teak-tree is indigenous; while among birds the beautiful green jungle-fowl of Java (*Gallus furcatus*) is found here, as well as the common species.

The inhabitants are Malays, allied to the Bugis of Celebes. Six distinct languages are spoken, and most of the people are Mahometans; but there are in the interior some savage races, corresponding to the Dyaks of Borneo. Some of the valleys are fertile, and a good deal of rice is produced, but agriculture is less advanced than in Bali and Lombok. There are no natural reservoirs of water, and the streams are often precipitous and run dry in the summer, so that irrigation would be difficult even were the people sufficiently advanced to attempt it. Ponies are very abundant, and are considered the best in the whole archipelago, and these, with rice, form the specialty of the island, which, however, also exports some tobacco, wax, birds' nests, gold, pearls, sulphur, timber, and sapan-wood. The island is divided into four native states, named Sumbawa, Dompo, Sangar, and Bima; but the Dutch have an Assistant-Resident at Bima, and exercise a general supervision over the governments of the island. The population is unknown, but is said to have been 170,000 previous to the great eruption. Many Malays and Balinese, and a very large number of Bugis, are settled in the island, with a few Chinese and Europeans.

7. *Flores and Sandalwood Island.*

Passing the Straits of Sapi and the uninhabited island of Comodo, we arrive at the large island of Flores, about 230 miles long and from 15 to 35 miles wide, very mountainous, and with active and extinct volcanoes, but almost entirely unknown to Europeans. We have now passed the boundary line between the two great races of the archipelago, the natives of Flores being tall and robust frizzly-haired savages, belonging to the dark Papuan race, but more nearly allied to the Timorese than to the New Guinea people.

The loftiest mountains of Flores are said to be nearly 10,000 feet high, tolerably well wooded, and producing copper, but little or no gold or iron. The forests produce sapan-wood, and another kind yielding a yellow dye, called "kayu-kunnig" by the Malays. The thickets near the coast are infested with a dreadfully poisonous shrub, probably one of the Euphorbiaceæ, whose juice when cut causes severe wounds and fever, or even blindness if it touches the eye. Sandal-wood is also found here, and with beeswax and ponies forms the chief export.

The Portuguese once had a settlement at the east end of the islands, and made many converts to Christianity; and at Larantuca there still remains a mixed race of Portuguese origin who are nominal Christians. A considerable number of Bugis are settled at Ende on the south coast and at other places; while emigrants from Bima in Sumbawa have established themselves at Mangarai on the north coast in several villages.

To the east of Flores, and separated only by narrow straits, are five islands,—Solor and Adanara, Lomblem Pantar, and Ombai, in a continuous line towards the east end of Timor. These are all hilly and volcanic, and rather barren; and they are inhabited by people of the

same character as those of Flores, while a few Bugis or other Malays are settled here and there along the coasts. The Dutch exercise supervision over all these islands, through their Resident at Coupang in Timor, and an administrator at Larantuca, with subordinates in several of the other islands. The people of Solor are excellent fishermen, and frequently capture the small whales called black-fish.

The large island Sumba or Sandalwood, 130 miles long by 50 wide, is situated 35 miles south of the western part of Flores, and the same distance from the extremity of Sumbawa. It is mountainous and probably volcanic, but very little is known of it. The people are said by Mr. Crawfurd to be of Malayan race, and of superior civilisation, the population being large and the country well cultivated. They grow rice and maize, wear cotton clothing, and possess goats, buffaloes, and ponies. They export sandal-wood, birds' nests, beeswax, and tortoise-shell, the trade being carried on wholly by Bugis who visit the island regularly in their praus.

Eastward is the small island of Savu, whose inhabitants are of a very superior type, judging by some of their chiefs seen by the present writer at Timor in 1859. They resembled Hindoos or Arabs rather than Malays, having fine well-formed features, with straight thin noses, and clear brown complexions. Both these islands are practically independent, but are included under the Dutch rule, receiving occasional official visits from the authorities of Coupang.

8. *Timor.*

The island of Timor, situated in the extreme south of the archipelago, is 300 miles long, and for the greater part of its length 60 miles wide. It is therefore considerably larger than Ceram, and has an area of more than 11,000 square miles. Timor lies obliquely to the great

chain of volcanoes from Java to Banda; and its geological formation is very different, consisting mainly of slates, schists, and sandstones, with limestone rocks of carboniferous age at the western extremity, as well as much raised coral rock. It is generally considered that there are no volcanoes in Timor, and none were known to Mr. Crawfurd when he compiled his valuable *Dictionary*. Mr. Scrope, however, in his work on volcanoes, speaks of Timor Peak as a mountain of great height, continually active before the year 1638, when it was blown up during an eruption, and replaced by a crater-formed lake. Previous to this eruption the mountain was said to be visible 300 miles off, and was therefore probably the loftiest in the archipelago. Gunong Allas, about the middle of the south coast, is marked on the latest Dutch maps as being 11,500 feet high.

Timor is mountainous throughout, but the ranges seldom rise higher than 5000 or 6000 feet. They are generally bare or thinly wooded, and often exceedingly sterile. The interior seems to be an extensive table-land, cut up into numerous parallel ridges with intervening valleys. These high lands produce excellent wheat and potatoes, while sheep and ponies appear to thrive. The rivers are numerous but are not navigable, and from the excessive drought of the dry season and the porous nature of the soil, many of them do not reach the sea at that time of the year. The only metals known to exist are iron, and small quantities of copper and gold. Sandal-wood of the best quality abounds, and forms one of the chief exports from the island.

The inhabitants of Timor appear to be wholly of Papuan race, but of a very distinct type from the natives of New Guinea. Their hair is less frizzled, their colour somewhat lighter, and their features less prominent. They are also one step higher in civilisation, making coarse

cotton cloths of a peculiar pattern, wearing a characteristic costume, and having several domestic animals. Their houses are usually not raised on posts, and are either large and oblong, or small conical huts with a door about three feet high. They form ingenious umbrellas out of palm leaves, make curious wallets of cloth, and have the practice of the "taboo" in full force. It is probable, therefore, that they may be a race who have migrated westward from the Pacific. They are divided into many small tribes speaking a variety of languages, are warlike, and for the most part have preserved their independence. They are all pagans in religion, and have many barbarous rites, such as sacrificing slaves at the interment of their chiefs, and stealing heads like the wild tribes of Borneo.

The western half of the island is under the nominal rule of the Dutch, whose chief settlement is Coupang, a neat little town with a mixed population of Malays, Chinese, Dutch, and natives. The Dutch Resident supervises the government of the eleven native States into which this part of the island is divided, as well as the islands of Semau and Rotti to the south-west, the latter forming the southernmost land of the Malay Archipelago, and inhabited by a people of Malay rather than Papuan type. The population of Coupang is about 7000, of whom about 100 are Europeans. It is a place of some trade, and whalers, as well as many merchant ships, call here for provisions and water. The chief exports are sandal-wood, beeswax, horses, and maize.

The Portuguese have their chief settlement at Delli a miserable town of hovels, with a ruined fort, and even the best buildings only of clay and thatch, without any attempt at decoration or even neatness. There is a Portuguese governor, and many officers and officials; but there are not five miles of road in any direction, and the fine hills that rise at the back of the town have not even decent bridle-

paths to make them accessible, though the town is very unhealthy. Owing to the vicinity of high land with a cool climate, Delli is the outlet for the wheat and potatoes which the natives grow on the hills. These are of excellent quality, and were there an energetic government and a few good roads, this island would probably supply the whole European population of the archipelago with bread. Sheep also thrive on the hills, and though wool-bearing varieties have not been introduced, the mutton is very good. Coffee of superior quality is also grown here. Ponies are abundant, and, with sandal-wood and beeswax, complete the list of articles exported. The population of the island of Timor is quite unknown, but from the comparative infertility of its soil, and the rude condition of its inhabitants, it cannot be great; and Mr. Crawfurd is probably not far wrong in estimating that it does not exceed 100,000.

9. *Islands east of Timor.*

To the eastward of Timor extend numerous groups of islands, most of which are very little known. The first we meet with is Wetter, a considerable island more than 80 miles long, situated about 50 miles north-east of Delli. It is mountainous and very uninviting in appearance, the hills being absolutely bare of trees, and the whole island looking like a recent volcanic product. The inhabitants are like those of Timor; and there are a few Bugis settled on the coasts. The principal export is beeswax.

Eastward of Wetter is Roma, a high and mountainous island about fifteen miles long, inhabited by a people said to be of Malay race, and who have been converted to Christianity by Dutch teachers. They are industrious and inoffensive, and are good fishermen. They export chiefly beeswax and tortoise-shell.

Still farther eastward about 80 miles is Damma, a

mountainous volcanic island with a lofty volcanic peak. The inhabitants are like those of Wetter. It produces sago, and nutmeg trees are said to grow wild.

To the south of these and east of Timor are the islands of Roma and Kissa, and the group of the Serwatty islands, all inhabited by a similar Malayan race who have been converted to Christianity. The Dutch formerly had an establishment at Kissa, but the islands are now under the Resident of Banda, who occasionally visits them officially. The people of these islands are said to be tall and good-looking, and very industrious; cultivating yams and sweet potatoes, and raising abundance of poultry and hogs.

Leaving this Malayan oasis, we come again, at the island of Babber, to a dark Papuan race in a barbarous condition, and the same type probably inhabits the small islands to the north, Nila and Seroa.

The Tenimber islands are an extensive group, of which the largest island, Timor Laut, is about 100 miles long, and is situated in a line between Timor and the Aru islands. The inhabitants are said to be dangerous, and are seldom visited, so that little is known of them, except by the Bugis and Goram people, who trade with them for *tri*-pang, tortoise-shell, and other products. One of the chief villages is on the south-east coast, and is named Oliliet. It consists of numerous wooden houses raised on posts, and the gables decorated with ornaments resembling cows' horns. The people are said by Crawfurd to be Malayan, but are probably of the brown Papuan type like those of Gilolo or Ceram, perhaps intermixed with some Malayan race. In the interior a savage, black, frizzly-haired people are said to exist. There is abundance of hogs, goats, and poultry in Timor Laut; and the more civilised people are industrious and skilful fishermen.

Of the natural history of this island nothing is known,

except that the Bugis praus bring home with them a beautiful blue and red lory of a peculiar species (*Eos cyanostriata*). This would imply that the fauna is more allied to that of the Moluccas than to Timor, and renders it probable that it would well repay the naturalist who should succeed in exploring the island.

MELANESIA.

CHAPTER XXII.

NEW GUINEA AND THE PAPUANS.

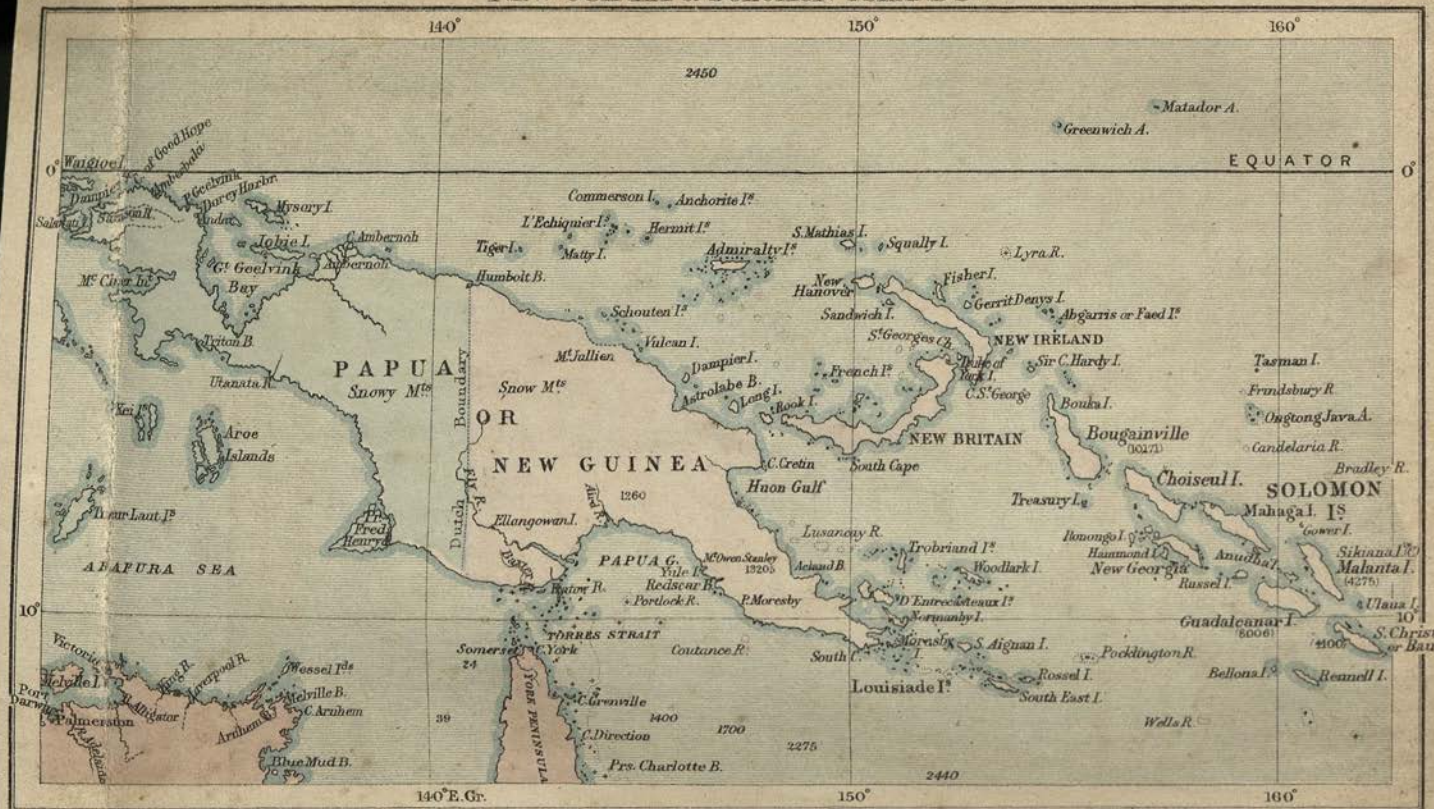
UNDER the name of Melanesia we comprehend all the islands and groups of islands stretching from New Guinea in the west to Viti or Fiji in the east; that is to say, the domain chiefly occupied by the Papuan race. The series begins with the still but little explored New Guinea, with its surrounding islands; and the Admiralty Isles, New Britain, and New Ireland, to the north-east. Proceeding still eastwards, or rather to the south-east, we meet with the Solomon Islands, the Santa Cruz or Queen Charlotte group, the New Hebrides, the French settlements of New Caledonia and the Loyalty Islands, and lastly, considerably farther east, the Fiji Archipelago.

The present chapter will be devoted to New Guinea, and the islands to the north and west which are joined to it by a shallow sea, and have evidently, at no distant period, formed, with it, one extensive land.

1. *Positions, Dimensions, etc.*

The great island of New Guinea stretches in a N.N.W. and S.S.E. direction, beyond the Moluccan and Arafura seas, thus forming a barrier between the Malay Islands and the Pacific. It lies wholly to the south of the equator, extending between 0° 22′, and 10° 42′ south

NEW GUINEA & SOLOMON ISLANDS.



Stanford's Geog.l Estab.t

London: Edward Stanford. 55. Charing Cross.

latitude, and between 130° 50′ and 150° 50′ east longitude. Its extreme length, according to the latest maps, is 1490 miles, and its greatest breadth about 410 miles. Its area is about 300,000 statute miles, so that it is very considerably larger than Borneo, which has generally been thought to exceed it, and undoubtedly holds the first place among the islands of the globe. The form of New Guinea is very irregular, but it has a large compact central mass, with great prolongations at both extremities. Its extensive north-western peninsula, formed by the deep inlet of Great Geelvink Bay on the north, is again almost cut into two portions by the deep and narrow MacCluer's Inlet on the west coast. The western extremity terminates in the two headlands called respectively Cape Spencer and English Cape (by the natives, Tanjong Ram and Tanjong Sele), between which lies the large island of Salwatty, separated from the mainland by the island-strewn Galewo Straits. The southern extension is somewhat more elongate, terminating in a kind of fork; the northern portion very narrow, forming East Cape, the southern more rounded and named North Foreland, which is separated by China Straits from a group of islands of which the chief are Basilisk and Moresby Islands. Generally the outline is tolerably even, but there are a good many inlets, bays, and harbours, in various parts of its extensive coasts. The best known are Dorey Harbour, Humboldt Bay, Astrolabe Bay, Huon Gulf, Collingwood Bay, and Good-enough Bay, on the north; Milne Bay at the south-eastern extremity; Hood's Bay, Port Moresby, Redscar Bay, Hall Sound, and the estuary of the Fly river to the east of Torres Straits; with Triton Bay, Kamrau Bay, and Van Goens Bay, on the west coast of the northern peninsula. There are also numerous islands all round the coast, which afford shelter, and to some extent supply the want of harbours.

2. *Physical Features of the Country.*

This great island appears to be divided into a northern and a southern mountainous portion, with a vast extent of lowlands in its centre; but far too little is yet known to enable us to determine whether these lowlands extend quite across to the Pacific Ocean. The massive peninsula north of MacCluer's Inlet appears to be everywhere mountainous, a continuous series of range behind range extending along the north coast, culminating, to the south of Dorey Harbour, in Mount Arfak, from 9000 to 10,000 feet high. A considerable river enters the sea to the east of Tanjong Ram, and is said to rise in the Arfak mountains. In the narrow isthmus at the head of the MacCluer Inlet there is a ridge about 1200 feet high, and the whole of the peninsula south of the inlet appears to be equally mountainous. When we pass into the great central mass of land to the south and east of Geelvink Bay, the mountain ranges increase in altitude. On the south coast, east of Lakahia Island, are the Charles Louis Mountains, beginning at Tanjong Buru with a height of near 5000 feet, and increasing to the eastward, till about 136° east longitude they reach a height of 9500 feet. They then stretch farther inland in an easterly direction; but their summits have been seen, in fine weather, apparently snow-covered, and their height has been estimated at 17,000 or 18,000 feet, by far the loftiest summits in the archipelago, and even in the whole space between the Himalayas and the Andes. This great range appears to run approximately along the fourth parallel of latitude, and it may thus merge into the northern coast range of mountains. That it does not extend farther south is proved by the fact of the Fly river having been ascended to latitude 4° 30′, more than half-way across the island, in a low country, with but very small hills. Everywhere

on the south of the island, west of Torres Straits, the coast is low and swampy, and no hills are visible; a striking contrast to the north coast, which appears to be everywhere hilly except at Point D'Urville, in longitude 138°, where a great river delta breaks the line of uplands. Passing through Torres Straits to longitude 144°, hills commence, and soon increase into a fine mountain range, with Mount Yule, 10,040 feet high, in longitude 147° 30′, and Mount Owen Stanley, 13,205 feet high, about 60 miles farther south, and 40 miles inland from Port Moresby. This range continues in a series of peaks of 10,000, 8000, 11,000, 9000, and 6000 feet, to the extremity of the island, where it terminates in the North Foreland, about 1800 feet high. On the north the hills are not so high, but they seem everywhere to approach the shore, and give indications of a mountainous interior.

3. *Early History and Recent Exploration in New Guinea.*

Till quite recently New Guinea was an almost complete *terra incognita;* but within the last twenty years, and more especially within the last six years, a number of travellers, naturalists, and missionaries, have visited it; some have penetrated into its interior; and a considerable body of information as to its natural productions and human inhabitants has been got together.

The earliest knowledge of this great island seems to have been obtained by the Portuguese, one of their ships having stayed some time in a port on the north coast, as early as 1526. Two years later a Spanish ship from Mexico coasted for a month along the north of New Guinea, which was then called Papua, from a Malay word applied to the natives, meaning frizzly-haired. Another Spaniard, Ynigo Ortiz de Retes, in the ship San Juan, sailed along the north coast in 1546, anchored in several

harbours, and was the first to give the country the name of New Guinea, from the resemblance of the people to negroes. In 1606 Luis Vaes de Torres passed through the straits which still bear his name, and sailed along the south coast, taking possession of it in the name of the king of Spain. In the same year the Dutch began their explorations in these seas, visited the Aru and Ké islands, and sailed along the west and south coasts of New Guinea; and from that time, for more than two centuries, almost all the exploration of the coasts was made by this nation; and we find their voyages commemorated in numerous Dutch names, as Geelvink Bay, Schouten's Islands, and MacCluer's Inlet. In 1700 our countryman Dampier sailed along the north coast, touching at many points, naming many capes and islands, and discovering the strait which bears his name. Thus a considerable knowledge of the coast was obtained; but not a single attempt was made to penetrate the interior. In 1827 a small Dutch settlement was attempted at Triton Bay, on the south-west coast; but it was soon given up, and no attempt at exploration appears to have been made. The present writer was informed by a Dutch gentleman at Macassar, that the officer in charge of this settlement, finding the life there insufferably monotonous, killed the cattle and other live stock, and reported that they had died, and that the place was unhealthy and the natives intractable. Had a naturalist been chosen for the post, we have every reason to believe a very different result would have been obtained.

During these voyages a considerable number of men belonging to the several ships were murdered by the natives, who have hence acquired an exceptionally bad reputation. But the narratives of many of the voyagers show ample reason for such treatment. Very often the Papuans were fired at because they appeared armed to resist the landing of a boat's crew; at other times their

houses were entered in their absence, or cocoa-nut trees cut down,—both acts of open hostility in the eyes of all these people. The Malays and Goram men, who from time immemorial have traded on the south-west coast of New Guinea, have often attacked the natives and carried away their women and children as slaves; and it is on this very coast that most of the massacres of ships' crews have occurred.

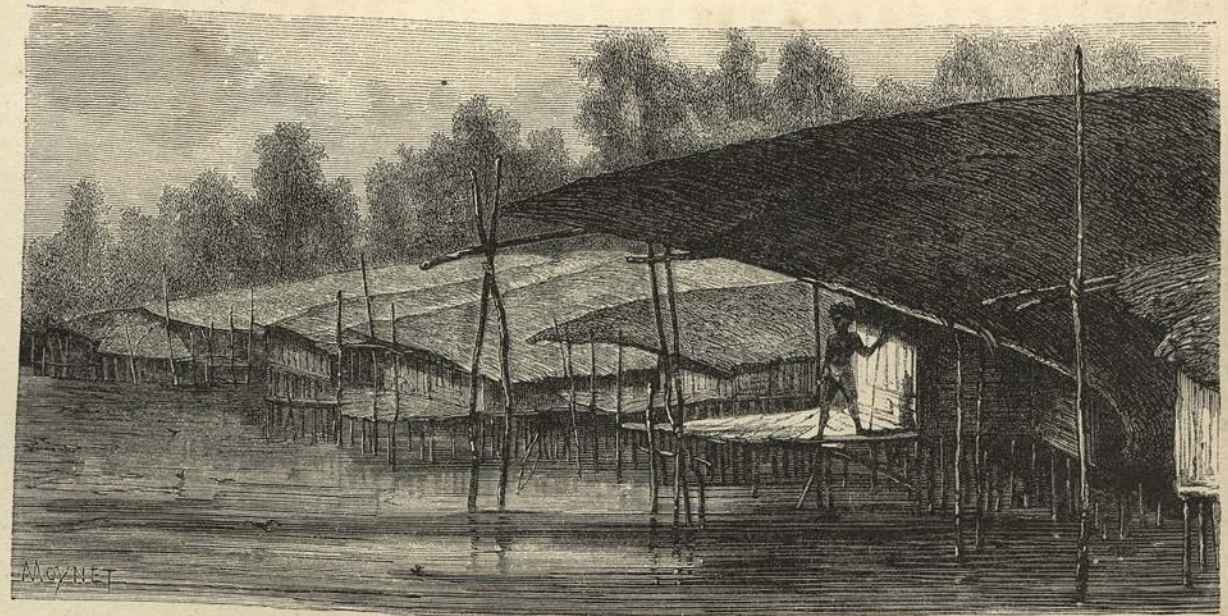
The south-eastern coasts of New Guinea have been mostly surveyed by British ships. In 1843 the "Fly" discovered the river named after that ship, and the survey was continued by the "Rattlesnake." But it was not till 1873 that Captain Moresby, in the "Basilisk," determined the form of the south-eastern extremity, which had previously been totally unknown, and thus completed our knowledge of the external form and dimensions of this vast island. We must now turn to the various attempts to penetrate the interior and obtain a knowledge of the human inhabitants and the animal and vegetable life of this interesting country.

Till the present century nothing was really known about New Guinea and its productions, except that its inhabitants were like negroes, and that it produced the beautiful "birds-of-paradise." Dampier discovered another of the remarkable birds, the crowned pigeon, which he describes as "a stately land-fowl, about the size of the dunghill cock, sky-coloured, but with a white blotch and reddish spots about the wings, and a long bunch of feathers on the crown," a most accurate and easily recognisable description. The French naturalist Lesson was the first European who visited New Guinea with a scientific object, in the surveying ship "Coquille," about the year 1824; but he only stayed a few days, and made but scanty collections. Other discovery ships, both French and Dutch, with naturalists on board, touched at several

points on the coast, and obtained samples of the productions of the country. In 1858 the editor of this volume visited Dorey, on the north coast of New Guinea, and remained there with four Malay servants for three and a half months; and this was the first time that any European had ventured to reside alone, and practically unprotected, on the mainland of this country. Extensive collections of birds and insects were made; but it was not found practicable to penetrate more than a few miles inland. Three years afterwards, therefore, in 1861, he sent his assistant, Mr. Charles Allen, to Sorong, near the north-western extremity, and he succeeded in penetrating about fifteen or twenty miles inland, to a mountainous village, where he stayed a month, and thus proved the possibility of living in safety among these much-dreaded savages.

We next come to the bold and successful exploit of Dr. Micklucho Maclay, who, in September 1871, landed at Astrolabe Bay, on the north-east coast, with only two servants, a Swede and a Polynesian, and remained there for fifteen months, for the sole purpose of studying the native inhabitants in a place where they had had no communication whatever with Europeans. The Polynesian died, and the doctor and his Swedish servant were found ill, and nearly starved, when visited by a Russian vessel fifteen months later. His most interesting observations on the inhabitants will be given farther on.

Next in time, as in importance, are the explorations of two Italian naturalists, Dr. Beccari and Signor D'Albertis, who in 1872 commenced the exploration of this great island by visiting the south-west coast at Karas Island and Kapuer, but not finding good localities went on to Sorong and Dorey on the north coast. Here Signor D'Albertis penetrated to a village named Hatam, twenty miles inland, and at about 3000 or 3500 feet elevation,



VILLAGE OF DOREY.

To face page 440.

where he lived a month, and obtained magnificent collections of the birds, insects, and plants of the mountain region. In another journey, in 1875, Dr. Beccari explored the Aru and Ké islands, but it was during his third voyage in 1875 that the greatest success was achieved. In the meantime, however, Dr. A. B. Meyer entered on the same ground, and made some important discoveries. In 1873 he chartered a small schooner at Ternate, and with it explored the whole coast of Geelvink Bay and its islands. At the southern extremity of the bay he marched inland till he reached a height of 3000 feet, and saw the sea at a great distance beyond the western shore of the island. The natives here were quiet and friendly. There is said to be a large lake near, with an outlet to the west coast, and a large population. Returning northward he succeeded in crossing the island to the head of MacCluer's Inlet in four days, the intervening ridges being 2000 feet high. Going next to Andai, south of Dorey, he ascended the Arfak mountains to a height of 6000 feet, and believes the summit to be not more than 7000 feet high. This journey was made rapidly, Dr. Meyer having left Ternate in March, and getting back to Vienna in November of the same year.

We now come to Dr. Beccari's journey of 1875, in which he added considerably to our previous knowledge, both in the domain of geography and natural history. He first explored the mountains east of Sorong, and at a place called Dorey Hum ascended a mountain called Morait, about 3000 feet high. Going a little farther east to Has, he again went inland, crossing a ridge 1200 feet high, and then descended to a river called Wa Samson, said by the natives to rise in Mount Arfak, and to pass by a tunnel under a mountain on its way to the sea, into which it falls from a great height among rocks. The coast is dangerous to approach, and the mouth of the

river has never been seen, which is explained, if this curious account should be true. The river is described as being only 20 yards wide, and 10 or 12 feet deep, with a strong current, so that it can hardly have so long a course as nearly 200 miles (the distance to Arfak) in a mountainous forest country close to the equator, unless its valley is very narrow and its tributaries few. Returning to Dorey, Dr. Beccari succeeded in reaching a height of 6700 feet on the Arfak mountains, which he believes reach to nearly 10,000 feet. He stayed a month in the mountains, first at a height of 5000 feet, and afterwards at Hatam, 3500 feet high. He subsequently explored other parts of the coast, and visited all the islands in Geelvink Bay. Immense collections in zoology and botany were made, and will doubtless be of great interest when they have been carefully examined. This must be considered by far the most important exploration yet effected in New Guinea, because it makes us acquainted with the highlands and the mountains, always the most interesting and characteristic portion of a new country.

In the meantime Signor D'Albertis, after returning home in ill health, again went out, to explore the south-east portion of New Guinea. He first established himself at Yule Island, at the entrance of Hall Sound, about 270 miles east of Torres Straits. Here he had his head-quarters for about two years, making numerous excursions into the interior for about 20 miles, but never being able to reach the lofty mountains which rise beyond. In September 1876 the steam launch "Neva" was lent him by the New South Wales Government in order to explore the Fly river, which he had already ascended a few miles in the missionary steamer "Ellangowan." He was now so fortunate as to penetrate to the extreme limit of the navigation of this river, a distance of about 500 miles, and to reach a point a little north of the centre of

New Guinea, in S. latitude 5° 36′; E. longitude 141° 27′. The river had numerous windings throughout its course, and at the farthest point reached it was rapid, with numerous sandbanks, and often not more than 30 yards wide. The gravel was composed of quartz, basalt, and limestone. The country was generally rich, and the vegetation very luxuriant, but it did not seem to be very thickly inhabited except towards the mouth of the river. This important exploration makes us acquainted with the lowland region of New Guinea to its very centre, but unfortunately to a very short distance from the banks of the stream.

4. *Geology and Natural History.*

In such an extensive country, with lofty mountain-ranges, we may be sure that a large variety of sedimentary and igneous rocks occur. Little, however, is yet known, except that active volcanoes do not exist on the mainland, nor are there any clear indications of extinct volcanoes such as occur in Australia, unless Cyclops Mountain near Humboldt Bay be one. Granite occurs on the north coast and the Arfak mountains, but elsewhere the rocks are stratified. At Dorey there is much raised coral limestone. On the south-east coast the hills are sometimes of limestone covered with quartzose sand which contains gold, while many of the islands exhibit horizontal deposits of sandstone often cut into pillars and cornices, so as to recall the aspect of the well-known desert sandstone of Australia.

The soil is almost everywhere exceedingly fertile, and is already known to be rich in valuable natural products. The country is overgrown with dense virgin forests, with the exception of the few patches of land reclaimed by the natives. There seem to be very few grassy and treeless tracts of any extent. The wood-

lands, however, have long been a source of wonder to the observer. The trees, often of a gigantic size, covered and matted together with lianas, extend right into the sea, while the dense foliage effectually shuts out the rays of the sun, so that there is a great lack of the smaller herbaceous plants. The character of the vegetation is essentially Malayan, and not a few of the New Guinea plants are identical with, or closely related to, those of the Moluccas. The more general prevalence of acacias, eucalypti, and some other species, on the southern coast plains, doubtless recalls the neighbouring Australian mainland. But it is remarkable that the vegetation retains its Malayan character pure and unmixed even to the southernmost islands in Torres Straits, where the dense and shady foliage of the woodlands presents a remarkable contrast to the light and almost shadeless eucalyptus groves of the Prince of Wales group near Cape York. But with all their beauty these forests are not so varied as might be supposed, nor is there such a diversity of species as in the more westerly Indian islands. Amongst the prevailing genera are the ferns (everywhere as abundant as they are varied), the aroideæ, cypereæ, and grasses; upwards of ten species of the palm; orchids, which are very widespread; laurineæ, including the tree that produces the massorinde (a species of cinnamon), one of the staples of trade in New Guinea; lorantheæ, bignonias, apocyneæ, sapoteæ, synantherеæ, rubiaceæ, myrtaceæ, rhizophoreæ, growing profusely on all the coasts; myristiceæ (possessing a special commercial value); leguminous plants, though not in such variety as might be expected; cucurbitaceæ, euphorbiaceæ, urticiæ, meliaceæ, very common; and, lastly, many species of figs. The Arfak mountains have yielded a sub-alpine vegetation of araucarias, rhododendrons, vacciniums, umbelliferæ, and the antarctic genus Drimys, a sample of the interesting flora that may be expected

when the summits of the Owen Stanley range and the great interior snowy mountains shall be reached.

5. *Animal Life.*

The zoology of New Guinea is at present far better known than its botany, and is exceedingly interesting; because it is evidently the centre from which most of the animals of the surrounding islands and many of those of North Australia have been derived.

Mammalia are very scarce. The largest and almost the only placental mammal is the wild pig, of a peculiar species; and there are also a few peculiar mice. All the rest are marsupials, the most remarkable being the tree-kangaroos forming the genus Dendrolagus, while some of those which are terrestrial are yet more allied to the last than to the Australian kangaroos. Seven other genera of marsupials belonging to the families Dasyuridæ, Peramalidæ, and Phalangistidæ, inhabit New Guinea, and of these, four do not inhabit Australia and one more is only found in the adjacent northern territory. A spiny ant-eater allied to the Echidna of Australia has recently been discovered.

In birds the richness is as conspicuous as is the poverty in mammals. Already nearly 400 species of land-birds have been described, and they comprise a larger proportion of beautiful and gorgeously coloured species than are to be found in any other country. About twenty species of birds-of-paradise have now been discovered, and an immense variety of kingfishers, parrots, and pigeons, including the most beautiful and remarkable of their respective families. About forty genera of land-birds are exclusively Papuan, as are considerably more than 300 of the species; and we may be sure that the great mountain ranges still contain many treasures for the ornithologist.

Reptiles are less known, but are undoubtedly very abundant. The snakes are more allied to Malayan than to Australian forms, while the lizards have equal affinities to both, but with a larger proportion of peculiar types. The frogs are more Polynesian and Australian.

Insects vie in beauty and novelty with the birds, and offer an immense abundance of strange forms and gorgeous hues, which are especially manifested among the butterfly and beetle tribes.

6. *The Papuan Race.*

We propose now to treat somewhat fully of the Papuan race, whose name is derived from the Malay word *papua* or *papúwah* = "woolly haired," but concerning whom much diversity of opinion prevails amongst the learned. Alfred Russel Wallace, Carl Semper, Adolf Bernhard Meyer, Micklucho Maclay, Octavius C. Stone, and Rev. W. G. Turner—to mention only a few of the latest explorers in this field—represent each of them peculiar views, and more time, and still more careful research will probably be needed before even a moderately unanimous opinion can be formed on the subject.

According to Wallace, the typical Papuan is of a deep sooty brown or black complexion, which, while often approaching, never quite reaches the coal-black hue of some Negro races. The shades vary, however, more than is the case with the Malays, often exhibiting a dusky brown colour.

On the other hand, Dr. A. B. Meyer insists on the great diversity of complexion shown in the transitions from the fair shades of the Malays to those of the true black Papuans.[1] The hair has a peculiar roughness, is dry and woolly, growing in small locks or curls very

[1] *Anthropological Note on the Papúas of New Guinea.* Vienna, 1874, p. 15.

short and close in youth, but later on acquiring a considerable length, and forming the firm mass of curly hair that constitutes the pride and glory of the Papuan. The face is adorned with a beard of the same curly character, which also grows more or less densely on arms, legs, and breast. In stature the Papuan decidedly surpasses the Malay, being in this respect perhaps equal if not superior to the average European.[1] His legs are long and thin, his hands and feet larger than those of the Malay, the face somewhat oval, the forehead flat, the brows very prominent, with large nose somewhat curved and high, with a thick base and broad nostrils, their openings concealed behind the prolonged tip of the nose. The mouth also is large, with thick and pouting lips. Hence, in consequence of the large nose, the features, on the whole, resemble the European more than the Malay type; and the peculiar form of this organ, the prominent brows, and the character of the hair on the head, face, and body, enable us at a glance to distinguish between the two races.

Nor does the Papuan appear to differ less from the Malay in his mental qualities, than in his figure and features. Impulsive and demonstrative in speech and action, he gives expression to his emotions and passions in cries and laughter, in ejaculations, and boisterous leaps and gestures. Women and children take part in all their dealings, and seem little disconcerted by the presence of strangers or Europeans. In estimating the intellectual powers of the Papuan, Wallace places him above the Malay, attributing his actual inferiority to the absence of the deeper influences of more highly-cultured races with whom the Malay has been repeatedly brought into contact. He

[1] Signor D'Albertis gives the height of the Papuans of the S.E. coast as 5 feet 8 inches; Lieutenant Connor, on the same coast, 5 feet 6 inches; and Dr. Comrie, on the N.E. coast, 5 feet 2 inches.

sums up his conclusions with the following trenchant remarks :—

"It appears, therefore, that whether we consider their physical conformation, their moral characteristics, or their intellectual capacities, the Malay and Papuan races offer remarkable differences and striking contrasts. The Malay is of short stature, brown-skinned, straight-haired, beardless, and smooth-bodied. The Papuan is taller, is black-skinned, frizzly-haired, bearded, and hairy-bodied. The former is broad-faced, has a small nose, and flat eyebrows; the latter is long-faced, has a large and prominent nose, and projecting eyebrows. The Malay is bashful, cold, undemonstrative, and quiet; the Papuan is bold, impetuous, excitable, and noisy. The former is grave, and seldom laughs; the latter is joyous and laughter-loving;—the one conceals his emotions, the other displays them." [1]

The New Guinea Papuan generally goes naked, except a breech-cloth of bark for the men, and a fringed girdle of the same material for the women; but he pays great attention to his hair, which is either cropped short or else plaited in small tresses, or in one large knot ornamented with bamboo combs, bits of bone, plumes, and other decorations. Nose, ears, neck, and arms are also adorned, the two first with bones, bamboo sticks, or feathers inserted in the pierced cartilage or lobes of the nostrils. Two boars' tusks joined together will even be attached to the nose with their tips turned upwards, while rings, bands, and the like, are reserved for the neck and arms. Very general also is the practice of scoring the skin so as to produce raised scars, and of painting the face, breast, and arms with all sorts of red and black marks and figures, either burnt in with glowing coals or else rubbed in with various kinds of earths. The teeth are filed to a point, though this practice does not seem to possess the same significance as with the Australians.

[1] *The Malay Archipelago*, p. 587.

Amongst the dwellings of the Papuans especially characteristic are those found along the coasts and river banks, and usually grouped together in a "kampong." They are built of bamboo and raised on stakes, so that they closely resemble the pile villages which have been discovered in the lakes of Central Europe. In Astrolabe Bay, however, they have low walls and roof almost coming to the ground, as with the Timorese. The Papuans also build *prâhus* or canoes out of hollowed trunks of trees, and as these are constantly liable to capsize, the natives become familiar with the water and expert swimmers from their very infancy.

Their domestic animals are the pig, dog, and fowls, all of which are eaten. They also eat the cuscus, kangaroos, lizards, fish, and molluscs, as well as many kinds of large insects; and in places where they have no communication with Malays or Europeans they use salt-water for cooking as a substitute for salt. Everywhere they cultivate the ground, fencing in their fields as a protection against the wild pigs, and growing sweet potatoes, yams (*Dioscorea* and *Collocasia*), bananas, and sugar-cane. They also have cocoa-nuts, bread-fruit, the kanary nut, mango, and the fruit of the pandanus.

At Astrolabe Bay Dr. Micklucho Maclay tells us that they make an intoxicating kava by chewing, as in the Pacific; but this is unusual, and in most places they have no intoxicating drink, and are quite unacquainted with the art of fermenting either palm-sap or cane-juice.

Amongst their arms may be mentioned the dart, bow, lance, and a kind of whirl-bat of hard wood elegantly carved; knives and axes are also met with, both formed of sharply-chipped flints resembling those of the stone age found in Europe. Altogether peculiar to the Papuans are the bamboo blow-pipes, of considerable length, which are used for signalling by means of dust blown into the air

after the fashion of the beacon fires of other peoples. These, however, are rare, and do not appear to have been noticed by travellers since the voyage of Lieutenant Kolff in 1828. The practice was first observed by Captain Cook on the south-west coast, where also the Dutch found it; and the more probable explanation seems to be that it was an attempt to imitate the smoke of firearms, and has been given up now that its uselessness has been discovered.

Social life centres entirely in the family, the head of which may have as many wives as he is able to support. The bride is purchased by the payment of a fixed value in slaves, goods, and provisions, and handed over to the husband with the accompaniment of much feasting, at which sundry ear-splitting instruments take the place of intoxicating drinks. Several families live together in the so-called "kampongs" or villages. In many places a certain authority is exercised over these villages by some old member of the tribe, but this is always of a very precarious character. No tribute is paid to the headmen, nor are they in any way distinguished from the rest either by special personal ornaments or superior dwellings.

Trade in New Guinea is limited to a few raw products, which are brought down from the interior by the natives and bartered with the Malay traders; nevertheless it contributes materially to render the Papuan more alive to certain wants of social life. In some districts, where this exchange is more fully developed, the natives dress in cotton clothes, and have, however superficially, adopted Mahometanism.

The Papuan has a decided superiority over the Australian in a fairly developed sense of form, asserting itself in the plastic imitation of various objects. Amongst them are found a number of carved figures, representing both men and animals, though the first are executed in a

highly primitive and eccentric fashion. The head, with its large thick nose and equally large and unshapely mouth, is invariably out of all proportion to the rest of the body.

Our information is very limited regarding the religious views of the Papuans, though they certainly seem to possess some definite ideas on the subject. At least there exist large structures of peculiar form, which can be nothing else but temples, besides figures of various kinds, obviously associated with certain religious conceptions. In some parts of New Guinea we find evidence of a definite notion of a Supreme Being supposed to dwell above the clouds. Cases of cannibalism have been reported, but are very far from being authenticated, and may probably be traced to misapprehension. Feastings are celebrated on various occasions, such as marriages, burials, and the like, and here a prominent part is played by music and song. The former is generally produced by a drum, while the latter consists of a loud chanting of lays. Like other primitive peoples, the Papuans have their national dances, for which they decorate themselves somewhat peculiarly.

The preceding general account is intended to apply to the typical Papuan as he exists over by far the larger part of the island yet explored. A considerable margin, however, must be allowed for individual and local peculiarities. The tint of the skin, the stature, the habits, and even the character, vary considerably; but it is the opinion of the best and most experienced observers that such variations imply no difference of race. The people of New Guinea, like all others, have undoubtedly been subject to the intermixture of many surrounding peoples. Malays have settled on their western and northern coasts; Australians may have intermingled with those living on the shores of Torres Straits; while brown Polynesians have undoubtedly occupied some portion of the south-

eastern shores. But in every part of New Guinea one physical character remains nearly constant, the frizzled hair, and this alone would suffice to refute the opinion of those who have hastily declared the people of the south-eastern extremity to be undoubted Malays.[1] Let us now see what the best recent explorers say about the people of the various parts they have visited.

Dr. A. B. Meyer, who is well acquainted with true Malays and other races of the archipelago, and who explored the whole north-west coast of New Guinea from the island of Waigiou to the extremity of Geelvink Bay, penetrating into the interior and ascending high mountains, considers all these people to belong to one race, with only such differences as are found everywhere between the highland and coast dwellers of the same type.

Dr. Beccari, who explored a greater range of country than Dr. Meyer, and for a much longer period, believes that he can detect three types of Papuans,—the one dwarfish, with short woolly hair, skin almost or quite black, nose much depressed, forehead extremely narrow and slanting, and brachycephalous cranium; these he terms Oriental Negroes, or *Primitive Papuans*, but they do not exist as a distinct race. The typical Papuans, on the other hand, have the skull dolichocephalous, and with the general characters already indicated, and they inhabit all the interior and much of the coasts of the northern peninsula. A third type are the Mafu Papuans,

[1] Captain Moresby, R.N., thus speaks of the people of the extreme east of New Guinea in a paper read before the Royal Geographical Society in 1875: "I will introduce you to our now first visited race of Malays. This race is distinctly Malayan, but differs from the pure Malay, being smaller in stature, with *less hair on the face.*"—"The hair of the head is *more frizzled.*"—"Their noses are *inclined to be aquiline.*"—"Many had a *Jewish caste of features.*" The characters italicised are all clearly Papuan, and it is evident that the writer is unacquainted with the Malay characteristics, and probably refers to the brown Polynesians as Malays.

who inhabit Dorey and most of the shores of Geelvink Bay, with its islands. These are a higher type, with fine, often European features, a better intellect, and a more advanced civilisation. He believes these are the result of a mixture of Caucasian or Hindoo blood, such as he considers to exist in the Galela men of Gilolo, already referred to as an exceptionally fine race. These people divide the year into twelve lunar months, each with a proper name; and they have names for the four cardinal points, for many stars, and for entire constellations. Dr. Beccari also traces a connection between their mythology and that of the Hindoos.

Dr. Micklucho Maclay, who so minutely studied the people of Astrolabe Bay and the surrounding country, believes that "the Papuan stock falls into numerous varieties distinct from one another, which, however, have no sharp lines of demarcation." The people he lived among were decided Papuans, being dolichocephalic, with large noses, projecting eyebrows, and frizzly hair, but with light chocolate-brown skins. They had never been in communication with Europeans or any semi-civilised people, being totally ignorant of metal. They practise circumcision. They make earthenware, as well as wooden bowls and plates; and they cultivate large plantations, so as to have a variety of vegetable food throughout the year. Yet, strange to say, the coast dwellers could not get fire themselves, but when they accidentally lost it went to the villages of the hill tribes, who were accustomed to get it clumsily and laboriously by friction.

Very similar people to those already described are found all along the south coasts, as far as Torres Straits, and to the eastern side of the Gulf of Papua; but from Robert Hall Sound and Redscar Bay all the way round the East Cape to Traitor's Bay on the north coast, a different people are found, much lighter in colour, with more

regular and European features, milder in disposition, with different customs and a higher civilisation. Yet they all have the frizzly hair of the Papuans, and there are so many intermediate types that while some observers consider the two races to be radically distinct, others believe that they are merely strongly contrasted varieties of one race in different stages of civilisation. Thus, Mr. S. M'Farlane says, that though he at first thought the people of Katau River (opposite Cape York) and those of Redscar Bay to be distinct races, the former Papuan and the latter Malayan, yet, after five years' acquaintance with them, he considers them to be of the same race; while the tribes of the interior, whom he alone ranks as true Papuans, are distinct. He considers that these coast people are a mixed intrusive race, consisting of Malays, Polynesians, Arabs, Chinese, and Papuan. They are, however, "an energetic, demonstrative, jocular, joyous, laughter-loving race," and these Papuan characteristics apply to all the tribes, black and brown, of this coast.

Again, Dr. Comrie, R.N., who has repeatedly visited all parts of the north coast between East Cape and Astrolabe Bay, is decidedly of opinion that all are of one race, though varying from light yellow-brown to brown and rusty black. All alike have the Papuan hair and features. Yet the people near East Cape are considered by Captain Moresby and others to be undoubted Polynesians, while those of Astrolabe Bay are as undoubtedly true Papuans.

The Rev. W. Y. Turner and Mr. Octavius C. Stone have given us the fullest description of the Motu and other tribes in the vicinity of Port Moresby,[1] and a careful consideration of the facts they adduce throws much light on the ques-

[1] "The Ethnology of the Motu," by the Rev. William Y. Turner, M.D.; *Journal of the Anthropological Institute*, May 1878, p. 470. "Description of the Country and Natives of Port Moresby and Neighbourhood, New Guinea," by Octavius C. Stone, F.R.G.S.; *Journal of Royal Geographical Society*, 1876, p. 34.

tion at issue. Mr. Turner classes the Motu as Malayo-Polynesians, and he is decidedly at issue with both Mr. M'Farlane and Mr. Stone in the assertion that they are "undemonstrative and impassive" like the Malays. He refers to their "huge mops of hair," and some of his illustrations (Figs. 1 and 2) show a decidedly Papuan countenance. He considers them quite distinct from the Koiari, an inland tribe, who are said to be the aborigines, while the Motu are intruders.

Mr. Stone gives us a fuller and more scientific account of these people. They are not so tall and not so warlike as the Papuans to the westward; they have more intelligence in some things, but are not such good sculptors or colourers as the more savage race. "Their character is entirely different from that of the quiet, apathetic, reserved, and undemonstrative Malay." Their hair resembles that of the eastern Polynesians, but is more frizzed, their complexions are darker, and they are more vivacious. Mr. Stone describes six tribes:—The Ilema about Freshwater Bay, the Maiva, the Motu, and the Kirapuno, following each other along the coast to Hood's Point, the Koitapu on the hills beyond the Motu, and the Koiari, occupying a wide extent in the interior. Of these the Ilema are most like the dark Papuans, while the Kirapuno are the lightest and handsomest, often having rich curling auburn hair. The Motu alone make pottery, and supply the other tribes. The Ilema alone make bows and arrows, the spear, shield, club, and tomahawk being the weapons of the other tribes. True tattooing by pricking is practised by them all. Their houses are usually built on piles, but are small, and suited each for a single family. They measure by the outstretched arms: they have a year of thirteen months, all named: they count up to a million, whereas five, ten, or at most twenty, is the limit for a Papuan. Every

tree, shrub, and flower is named, as well as the winds, and many of the stars. They dislike the dark races, and admire the fairest, and therefore look with admiration on the white-skinned Europeans. On the other hand, they are said to be "accomplished thieves, inveterate liars, confirmed beggars, and ungenerous to a degree, so that, even if at death's door for want of food, they would *give* you nothing." They differ much in their habits. The Motu are lazy and extremely dirty, neither washing their bodies nor cleaning their villages; but farther east, at Hood's Bay, the people are described by the Rev. Mr. Lawes as being industrious and cleanly, their villages laid out in regular streets and squares, kept neat and well swept, and even as having gardens and cultivated flowers.

Now, taking these accounts altogether, we have undoubtedly many features good and bad which are characteristically Polynesian—such as tattooing, absence of the bow and arrow, one tribe only making pottery, the small houses, the power of counting, etc. etc.; and this similarity is supported by an undoubted affinity of language which all observers have noted. Both in sound and in vocabulary the languages of the coast tribes of this district are Polynesian, whereas the inland tribes retain their harsh Papuan forms of speech. It seems clear, then, that the eastern peninsula of New Guinea has been colonised by brown Polynesians, who have largely intermixed with the darker indigenes who still inhabit the interior. The mixture is evidently of ancient date, and has generally been very thorough; for all the tribes have some mixture of Papuan with Polynesian characters. Moreover, in some cases Polynesian habits and ideas seem to have penetrated among pure Papuans, and *vice versâ;* while, as we have seen, the two groups blend so insensibly into each other that many competent observers confess themselves unable to separate them.

Compared, however, with the few districts inhabited by these mixed races, the area over which the undoubted Papuan stock prevails is overwhelmingly great. Nowhere in the whole island does any other race exist in a pure, or even nearly pure, state; so that there is really no sufficient ground for asserting that New Guinea is inhabited by two or more races, but merely that at various points of the coast the intermixture of Polynesian or Malayan blood has modified the native Papuan both physically and mentally, has introduced a certain amount of civilisation, and has established another class of languages. Adopting the nomenclature of Mr. Ranken, who uses the native name Mahori for the brown or eastern Polynesians, it would be well to term the people of Eastern New Guinea Mahori-Papuans, and entirely to avoid the terms Malay, or Malayo-Polynesian, as being erroneous both in theory and in fact.

7. *Local Divisions of New Guinea.*

The only great political division of the island is that into a western, or Dutch, and an eastern, which will probably be an English half. The Dutch claim from the western extremity up to 141° E. long., and it is a claim well supported by a continuous series of explorations and surveys, and by the actual exercise of jurisdiction over all such portions of the coast as pay tribute to the Malay Sultan of Tidore.

There are several subdivisions recognised by the native traders. The two great north-western peninsulas go by the name of Papua Onin, the northern peninsula being "Onin dibawa" (Lower Onin), and the south "Onin diatas" (Upper Onin). The natives of this part of New Guinea are fierce, and have a bad reputation; and on the west coast the Bugis and Goram men who

trade with them never go unarmed, and they say that if they cannot agree on a bargain they have to fight. Most of the recorded murders by Papuans have occurred on this western coast. The people of the north coast and interior, between Salwatty and Dorey, are called Karons, or Karoans, and are said to be cannibals. The south-western shore of Geelvink Bay is called Wandamen, or Vandamen, and the people are a fine tall race. The extreme south is Tarugo, and the eastern side Aropen, or Tana Aropen (Aropen Land). Eastward still to Humboldt Bay is Tana Koramba. Returning to the south coast, the people of the interior of the southern peninsula are also termed Karons, which is probably merely a name for savages. The country about Triton Bay is called Merkus-oord, and eastward to the Oetanata river, Kowayi. For about 100 miles east of Oetanata river, the country is called Timakowa, and this seems to mark the eastward limit of the Malay traders, as beyond it no local names are applied, and the same may be said of the country to the east of Humboldt Bay.

8. *Missionary Stations in New Guinea.*

The only Europeans now settled in any part of New Guinea are missionaries. At Dorey Harbour, German missionaries have been settled since 1856, first on the small island of Mansinam, and lately also at Andai, on the main land. In all this time, however, they do not seem to have been very successful in civilising the people.

On the south-east coast the London Missionary Society have established their head-quarters at Somerset, Cape York; and by means of a small steamer, the "Ellangowan," keep up communication with a number of mission stations on the islands in Torres Straits where

native teachers are established; and they have also done good work in partially exploring the coast and ascending the Katau, Baxter, and Fly rivers as far as their vessel would go in safety. They have also one mission on the mainland at Port Moresby, where an Englishman, the Rev. Mr. Lawes, is settled. This is a fine position from a geographical point of view, having a mountainous country immediately around it, and the lofty Owen Stanley range, over 13,000 feet high, only forty miles distant. With this mission as a base it would not be difficult to open a route to this noble mountain, where the naturalist would almost certainly be repaid by a rich harvest. The success of Dr. Beccari and Dr. Meyer in the north-west should encourage explorers to make the attempt. It is in this direction also, that, according to recent accounts, Australian gold-miners are making successful explorations.

9. *Papuan Islands.*

Under this head we include those islands round the west and north-west coast of New Guinea which lie within the hundred-fathom line of soundings, and are inhabited by the characteristic "birds-of-paradise," together with a few others which evidently belong to the same geographical area.

The Aru Islands are most remote from the mainland of New Guinea, being from 80 to 150 miles distant, but the whole of the intervening sea is so shallow as to be fished for pearls by the native divers. These islands are about 100 miles long by 30 wide, and consist of three large, and a number of small, islands. The larger of these form a connected mass of land divided by narrow channels, some of which are exactly like rivers winding through a low undulating country. The

islands are all of coralline limestone, nowhere exceeding 200 feet above the sea, and everywhere covered with a lofty virgin forest. Besides birds-of-paradise, cassowaries and kangaroos are found here, animals which could only have found their way to the islands over dry land. The inhabitants are true Papuans of various tribes, but generally inferior in physique and appearance to those of Ké and to the Mafors of Geelvink Bay. Some native teachers from Amboyna are established in two or three of the villages on the coast, and have partially converted and civilised these people, but the majority are in a state of utter barbarism.

The little island of Dobbo, on the west of the larger mass, is the seat of a temporary town or fair during the season, which lasts from January to July or August. The permanent residents are very few, but there are whole streets of houses belonging to the traders who annually flock here. These are Chinese, Bugis, and men from Macassar, Goram, and Java, who come here in native praus, and open stores for the purchase of the produce of the surrounding islands, of which pearl-shells, tripang, and tortoise-shell are the most important, with edible birds' nests, pearls, birds-of-paradise, and ornamental timber in smaller quantities. The trade is estimated roughly at £18,000 per annum, and during the height of the season there are probably a thousand people collected here, representing all the chief races of the archipelago. The only government is represented by a Dutch Commissioner, who makes a visit of a few days once a year, yet everything goes on very quietly, and there is not more crime or disturbance than in places where all the forms of law and civilisation are in full force.

Mysol is the next island we come to, lying 60 miles due north of Ceram, but divided from that island

by a very deep sea, while, though almost as distant from New Guinea, there is very shallow water between them, not exceeding 25 fathoms. It is of a compact sub-triangular form, about 50 miles long by 20 wide, mountainous and forest-covered. It contains kangaroos and birds-of-paradise, and the usual characteristic Papuan fauna. The inhabitants of the interior are true Papuans, but on the coast are a mixed Malayo-Papuan race, who are Mahometans, and are ruled over by a rajah tributary to the Sultan of Tidore. This island is seldom visited, and very little is known about it.

Salwatty, Batanta, and Waigiou, are three large islands off the north-west extremity of New Guinea. Salwatty, of a roundish form, and about 30 miles across, is divided from the mainland by the narrow Galewo Straits. Batanta, divided from the last by Pitt Strait, is a long, narrow, mountainous island. Thirty miles northward we come to Waigiou, nearly 80 miles long by 20 wide, but much cut up by deep inlets, which penetrate from the south almost to the north coast. This island is very rugged and hilly, but with no very lofty mountains. In the north are hard crystalline rocks, but the south is mostly coral limestone, fissured and worn into many fantastic shapes. The whole is covered with dense forest. This island is remarkable for possessing two peculiar birds-of-paradise, not found in any other island. The inhabitants are not truly indigenes, but appear to be immigrants from New Guinea, Gilolo, and the surrounding islands, some being pure Papuans, others mixed in various degrees. The language, however, is that of the Mafors of Dorey, and the same language is spoken at Salwatty. They live under petty rajahs, subordinate to the Sultan of Tidore, to whom they have to pay an annual tribute of paradise birds, tortoise-shell, and sago.

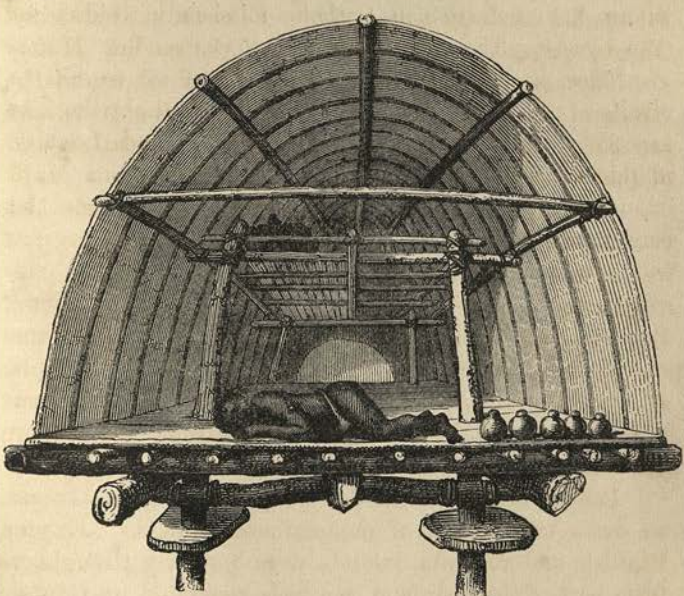
Passing eastward to Geelvink Bay we find two large

islands, Mysore and Jobie, two smaller, Mafoor and Misnomia, with many others close to the coast. Mysore, or William Schouten's Island, is 80 miles from the coast of New Guinea, and situated nearly in the line joining the two extremities of the bay. It is more than 70 miles long, but is divided across its middle by a narrow channel passable only for small canoes, the two parts being known by the native names of Sook and Biak. This island has no birds-of-paradise, but it contains the rare and beautiful species of crown-pigeon, *Goura Victoriæ*, in abundance. The inhabitants of this island and of the smaller Mafoor are Papuans, similar to those now found all round the coasts of the bay. They constitute the Mafoor tribe, and are said to have come originally from the small island of that name.

Jobie is about 100 miles long and 12 wide. Its coasts are inhabited by Papuans of the Mafoor tribe, but in the interior are a wilder race, who are said to be cannibals, and a perpetual war is carried on between the two. Here are three kinds of paradise birds, but all of the same species as are found in the mainland; but this was to be expected, as its eastern extremity extends to within four miles of the main island. The crown-pigeon found here is, however, that of Mysore, not that of New Guinea.

Passing on to the eastern peninsula of New Guinea, we have two groups of mountainous islands. Hayter, Basilisk, and Moresby Islands were formerly thought to form part of the mainland, but were separated by Captain Moresby. The channels between them appear to be shallow. They are about 1000 feet high, well cultivated, and inhabited by the light-coloured Mahori-Papuans. A little farther north are the D'Entrecasteaux islands, consisting of three islands separated by narrow channels, and forming a group about 90 miles long. Goodenough Island on the north-west consists of a fine mountain 7000 feet

high; Fergusson Island, in the centre, is the largest, and about 6000 feet high; while Normanby Island, to the south, is long and irregular, and of less elevation. These islands are separated from New Guinea by a deep sea, but as they approach it within 10 miles at East Cape, and about 15 miles at Cape Moresby, they must be classed as Papuan islands. They are woody, but well-peopled and cultivated. The inhabitants appear to be also Mahori-Papuans.



INSIDE OF HUT, LOUISIADE ARCHIPELAGO.

Extending south and east from Moresby Island are a series of islets and reefs forming the Louisiade Archipelago, terminating in South-East Island and Rossel Island, the former about 40 the latter about 20 miles in length. Rossel Island is high and wooded, its hills rising

to 2500 feet, and composed of mica-slate and greenstone. The natives are dark-brown Papuans, with the prominent nose and immense mop of hair. They wear the usual Papuan costume, but have no scars or tattooing on their body. They make tunnel-like huts, 30 feet long by 10 wide, with the floor raised about four feet above the ground. They use stone axes, and have the same weapons as other Papuans.

A little farther north is Mayon or Woodlark Island, where a French Roman Catholic missionary resided for many years. The natives are dark Papuans.

Maer or Murray Island, at the entrance to Torres Straits, is remarkable for being inhabited by people exactly resembling the New Caledonians and Loyalty islanders. They are supposed to have come from Maré Island, one of the Loyalty group, and to have given the same name to their new home.

CHAPTER XXIII.

OTHER ISLANDS OF MELANESIA.

1. *The Admiralty Islands.*

THESE consist of one large island about 60 miles long by 20 wide, and a considerable number of small ones, lying between latitudes 1° 50′ and 3° 10′ S., and longitudes 146° and 148° E. It is the farthest north-west of the extensive series of islands which run in a general north-west and south-east direction to the east of New Guinea, and nearly parallel with it. The main island is distant from New Guinea about 160 miles, and from New Hanover about the same distance. It is generally low, but contains mountains rising to a height of about 1600 feet. All the islands have a very damp hot climate, and are densely wooded.

The wild pig and a species of *Cuscus* are the only known land mammalia. Birds do not seem to be numerous. The naturalists of the "Challenger" obtained only fourteen species of land-birds, among which were the widespread lory (*Trichoglossus cyanogrammus*), two fruit-pigeons, a megapodius, and three fly-catchers.

These islands were first visited by Captain Carteret in 1767, whose boats were attacked by the natives. Many other ships have passed the islands, and had communication with the inhabitants, who came off in their canoes, but no Europeans appear to have actually landed till the visit of the "Challenger" expedition, which lasted from March 3 to 10, 1875. It is from the very

interesting paper of Mr. H. N. Moseley that we extract the following description of the native inhabitants.

The Admiralty islanders are of moderate height (mean of nine men 5 feet 5 inches), their colour a blackish-brown, often very dark, but in a few cases a light yellowish-brown. The hair is of the usually frizzly Papuan type, forming a dense mop in the younger men, crisp, glossy, and elastic, every hair rolling itself up into a spiral. The beard is scanty, and whiskers almost absent, but the arms and legs of the men are thinly covered with curly black hair. The features appear to be rather less prominent than usual among Papuans, but of the same general type. In some, however, the remarkable Papuan nose was very pronounced. The language has some peculiarities, which allies the people with the Caroline Islands rather than with those of New Guinea.

The only clothing of the men is the usual T-bandage of bark; of the women two bunches of grass suspended from a girdle. Their houses are built on the ground, of an elongate beehive shape, about 20 feet by 10 feet, with low walls, sometimes made of billets of wood. Larger houses, with carved figures on the door-posts, are supposed to be temples. Their canoes are formed of a hollowed tree, with the sides raised by a plank, and fitted with an outrigger.

Ornaments are chiefly worn by the men, and consist of shell armlets, discs worn on the breast or forehead, ear and nose ornaments made from shells or teeth, necklaces, rings of tortoise-shell in the ears, plaited waist-belts and armlets, and charms composed of human bones tied up with feathers. The hair of women, boys, and old men is cut short, the young men only wearing it long, and keeping it combed out into a mop, in which a comb or feathers are sometimes worn. The men are marked with scars on the chest and shoulders, but the women are regularly

tattooed in elaborate patterns on the face and upper parts of the body, but executed with cuts or lines instead of dots, and not so distinctly visible as with the Fijians and Samoans.

They chew betel with lime, but they neither use kava nor tobacco. Their food is cocoa-nuts, sago, taro, and a few plantains and other fruits, and sugar-cane; also abundance of fish, pigs, the cuscus, and pigeons, which they catch by night. They use nets and stakes for fishing, and also shell fish-hooks. They make excellent unglazed pottery, and large wooden bowls.

They have no metal, but use tools of stone and shell. The commonest tools are a small shell adze, and axes of hard volcanic rock. Spear-heads are made of obsidian, and the same with short handles serve as knives. Pieces of pearl oyster-shell ground down to a sharp edge are also used as knives to cut cordage, etc.

Weapons are very few, consisting solely of lances of various kinds thrown by the hand. They have no bows, slings, throwing sticks, clubs, or shields, or even thick spears for close fighting, thus differing from almost all other Papuans, and from most Melanesian tribes.

In wood-carving they are very skilful, and show great taste in their designs. A peculiar ornament is a circular white plate ground out of a Tridacna shell, on which is cemented a plate of tortoise-shell, cut out into a great variety of beautiful designs, no two being exactly alike. For musical instruments they use conch-shells, Jews'-harps of bamboo, pan-pipes of three and five bamboos, and cylindrical drums. The women are treated as by other Papuans. Polygamy is practised mostly by the chiefs, who seem to exercise considerable authority. There are separate houses for the unmarried men, and others for the women. In character they are passionate, but quieter than most Papuans. Their peculiar customs probably

indicate a mixed origin at a remote period, by means of wandering parties from islands to the north and east.

2. *The New Britain Group.*

This group consists of two large islands, New Britain and New Ireland, to the eastward of the Admiralty Isles, and lying so as to form a deep horseshoe. At the extremity of the northern arm lies New Hanover, and at that of the southern, Dampier's Strait and Rook Island, little more than 20 miles from the coast of New Guinea. A number of smaller islands are scattered around these, and about 30 miles to the north a chain of small islands leads on to the Solomon group.

New Britain is about 300 miles long, with an average width of about 30 miles. It is traversed by the parallel of 6° S. latitude, the eastern end curving up to near the parallel of 4° S. New Ireland is about 230 miles long, and hardly more than 12 miles wide, its southern end overlapping New Britain, while it bears away to the north-west.

These islands were discovered in 1699 by Dampier, who sailed round them, and noticed that they were "mountainous and woody, with rich valleys and pleasant fresh-water brooks." They seemed thickly inhabited, and abounded in plantations and cocoa-nut trees. The natives were "strong and well-made blacks, with large flat noses and crisp hair;" they were armed with swords, lances, slings, and bows and arrows, and "the men were finely bedecked with feathers of gay colours stuck in their hair," while the women "were totally naked, save a few green boughs stuck in the string tied around their waists." The small volcanic islands in Dampier's Strait "vomited fire and smoke very amazingly."

The Rev. G. Brown, of the Australasian Wesleyan

Missionary Society, visited these islands in 1876, and Lieutenant Strauch the New Hanover Islands, and from their accounts we know something of the present condition of both these groups. New Ireland consists of a mountain range rising abruptly from the beach on the south-west side, but sloping more gradually on the north-east. Its height is between 2000 and 3000 feet. The rock is mostly limestone, and coral reefs are abundant all round the islands. New Britain is believed to be loftier, and there is an active volcano near its northern end.

The natural history of these islands shows a close affinity to that of New Guinea itself. They contain a kangaroo, besides other marsupials; a cassowary, and a number of other birds closely allied to or identical with those of New Guinea, but as far as yet known no birds-of-paradise. The insects are very fine, comprising some of the most gorgeously-coloured butterflies known. The vegetation is luxuriant; the mango and cocoa-nut are indigenous; while bananas, yams, taro, and sweet potatoes are cultivated for food.

The people are dark brown, or sometimes much lighter, according to locality. Their average height is 5 feet 6 inches, but on New Ireland men of 6 feet are not uncommon. Their hair is matted and curly. The men usually go quite naked. They are said *not* to use bows and arrows, so either Dampier was mistaken, or some tribes do use them. Mr. Brown remarks that the light coloured tribes of Wide Bay in New Britain use shields, which are unknown elsewhere. The houses are small low huts, about 8 feet by 5 feet, containing no mats or furniture of any description; but on New Ireland there are larger common houses for the young unmarried men. The languages spoken are very numerous. Chiefs have very little authority. Polygamy is generally practised. There is a curious custom, analogous to what prevails

among the Australians, of a division of the whole population into two classes, called here Maramara and Pikalaba, and marriages between parties of the same class are forbidden, and thought to be very vile. Another remarkable, and perhaps unique custom, is the shutting up of girls of six or eight years old in cages like huge extinguishers made of palm leaves, and out of which they are never allowed to come till they are to be married. Some are so shut up for five years, old women attending to them. These cages are placed inside large houses set apart for the purpose, and the girls are only taken out once a day to wash, but they never leave the house. The house itself is surrounded by a reed fence, so that there is no ventilation within the cages, yet the girls do not seem to suffer in health.

The people of New Ireland are said to be undoubted cannibals, a smoke-dried human hand and thirty-five human jawbones being seen in one hut, and the fact of human flesh being a favourite article of food was acknowledged by the natives themselves. On the whole, it seems clear that these people are mainly of Papuan race, but with some intermixture of Mahoris or Mahori-Papuans.

The New Hanover people (and probably the natives of the larger island as well) do not tattoo or cicatrise their limbs; their canoes have raised and elaborately carved ends; they chew betel, and have shell and tortoise-shell ornaments like those of the Admiralty Islanders. They all wear nose ornaments, and sometimes have enormous mops of hair like other typical Papuans.

On Duke of York Island, situated in the straits between New Britain and New Ireland, a mission with native teachers has been established under Mr. Brown's supervision. The island is about ten miles long, and is very beautiful, being wooded and well cultivated.

3. *The Solomon Islands.*

This group consists of a double row of islands extending nearly 700 miles in a N.W. and S.E. direction. The four northern islands vary from 120 to 150 miles long, and from 20 to 30 miles wide. Bougainville Island, the largest, has its northern point about 130 miles east of the southern point of New Ireland, and is followed by Choiseul, Ysabel, and Malayta Islands, the straits between them varying from 15 to 50 miles in width. Parallel with these, and about 30 miles distant, are the islands of New Georgia, Guadalcanal, and San Christoval, the first opposite Choiseul Island, while the last extends nearly 100 miles farther to the S.E. than Malayta Island. Between New Georgia and Guadalcanal is the smaller Russell Island, while numerous small islands and islets are scattered among and around the others.

These islands were discovered and many of them named by the Spaniard Mendaña in 1668, but they have not been much visited since, owing to the natives having a bad reputation. Of late years, however, sandal-wood traders have gone to these islands, and some ships of war and missionary vessels have touched at them, and given us the scanty information we now possess. An English trader is settled at Makira in San Christoval Island.

The whole group seems to be volcanic, and there is an active volcano in Guadalcanal Island. The islands are very mountainous, Guadalcanal rising to 8000, and San Christoval to 4000 feet above the sea, and they are mostly covered with fine forests, the vegetation being described as unusually luxuriant and beautiful, even as compared with the other islands of the Pacific. The forest trees are magnificent, and tree-ferns of 30 or 40 feet high abound. Besides sandal-wood, ebony and lignum-vitæ grow here. This group marks the farthest

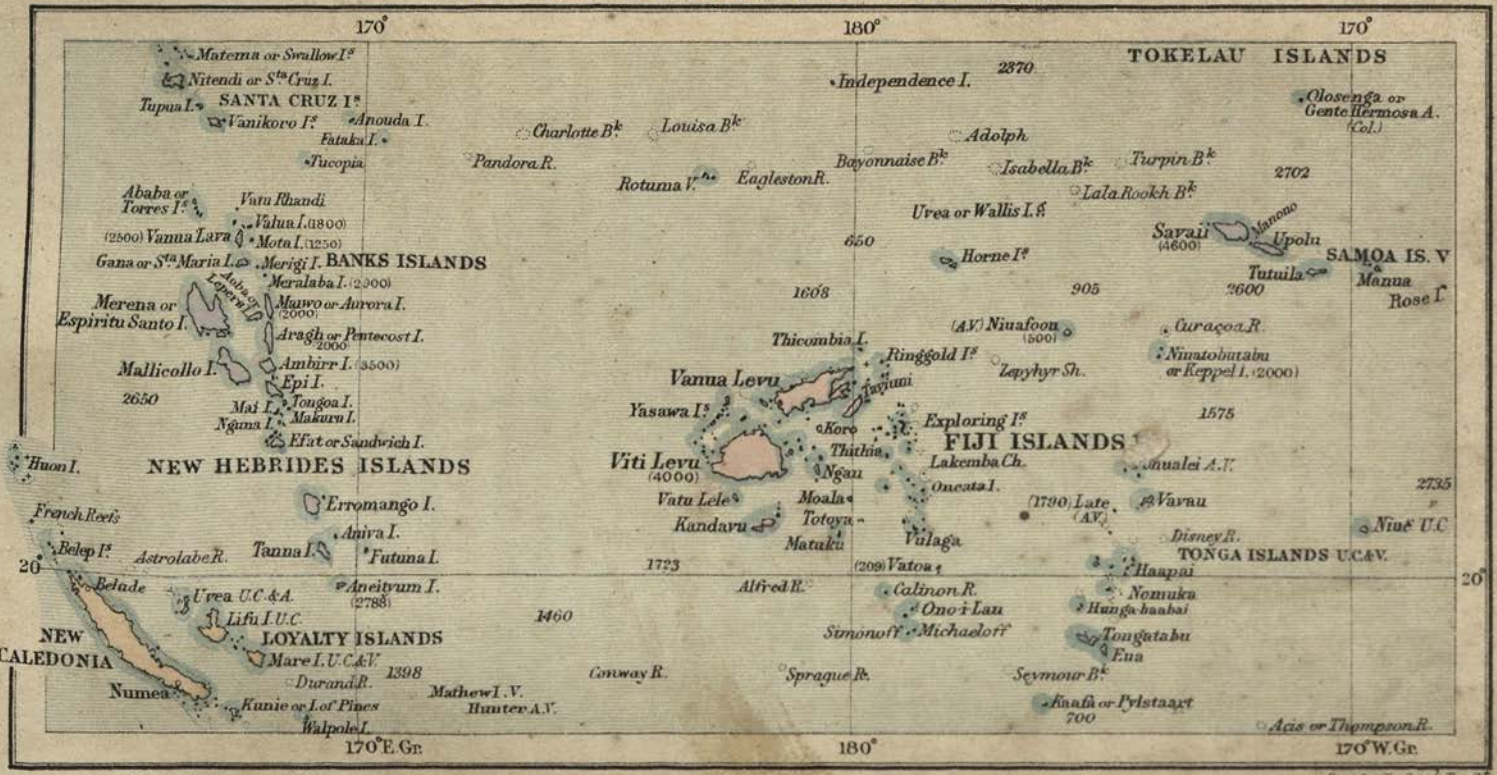
limit of many of the peculiar animal forms of New Guinea. The cuscus is found here, but apparently no farther east; and the same may be said of the crimson lories (*Lorius*), cockatoos, hornbills, and the genera *Dicrurus, Philemon, Dicœum, Calornis, Gracula, Centropus, Eurystomus, Nasiterna, Geoffroyus, Eos,* and *Macropygia,*— all highly characteristic of the Moluccas and New Guinea, and quite unknown in any of the more remote Pacific islands.

The natives of these islands are very interesting. They are a dwarfish race, with stout bodies and limbs, and woolly hair, generally turned red or yellow with lime, but never forming great mops as with the true Papuans. Their features appear to be coarse but tolerably well formed, and without the prominence of the Papuan, or the power and intelligence of the Fijian physiognomy. They go almost or quite naked. Their houses are fairly well built, with bamboo walls and having the door at the end. Their village-halls and canoe-houses are large and lofty, and often highly decorated with carving and painting. Their canoes are built with peaked ends, like those of New Guinea, and usually have no outriggers, being constructed of thin planks to a good and elegant model. According to Mr. C. F. Wood, they are unlike any others in the south seas, and are perfect gems of beauty. The great war-canoes are highly decorated with carving, and with inlaid shells, paint, and tassels of dyed pandanus leaves.

The people are excessively fond of ornament, and load themselves with bracelets, nose and ear ornaments, necklaces, girdles, etc.; and in the construction of these they show great ingenuity.[1] They make circular plates of white shell, overlaid with open work tortoise-shell like

[1] For excellent figures of these ornaments see Brenchley's *Cruise of the Curaçao.*

NEW CALEDONIA TO SAMOA ISLANDS.



Abbreviations.
A. Atoll V. Volcanic U.C. Upraised Coral
Colours.
Buff - French. Pink - English.

Heights thus (4600) ft.
Depths " 1575 fathoms

London: Edward Stanford. 55. Charing Cross.

Stanford's Geog.l Estab.t

the Admiralty Islanders. The nose ornaments pass through either the septum or the wing of the nostrils, and are of many strange shapes. The necklaces are beautifully formed of small shells, porpoise or other teeth, shell-rings or beads in great variety, while their ear and nose ornaments are often elaborately carved in mother-of-pearl or tortoise-shell. Sometimes the ear-lobe is perforated and stretched to such a size as to admit an ornamental disc more than three inches in diameter. Their weapons are bows and arrows, clubs and spears, and they use wicker shields often beautifully ornamented with shell-work.

A missionary establishment once existed at Makira in San Christoval, but it was abandoned on account of the hostility of the natives, who have murdered many boats' crews, but probably always in revenge for injuries done to them by the sandal-wood traders. They are undoubted cannibals. Captain Edward Redlick in 1872 saw a human body cooked whole, and Mr. Perry, the English Resident at Makira, told him that he had seen twenty such ready to be served up at one time.[1] The roofs of their large houses are crowded with bones of animals of all kinds, including human skulls. Their food is bread-fruits, yams, taro, and cocoa-nut, with such fish or flesh as they can obtain, and they serve it up in elaborately carved wooden bowls. They are very fond of dancing, and are said to sing in excellent time, and with a good appreciation of harmony.[2]

4. *The New Hebrides and Santa Cruz Groups.*

These islands lie in a N.N.W. and S.S.E. direction along a distance of about 700 miles, between the parallels

[1] *Geographical Magazine*, 1873, p. 361.

[2] Wood's *Yachting Cruise in the South Seas*, p. 123.

of 9° 45′ and 20° 16′ S. latitude, and the meridians of 165° 40′ and 170° 30′ E. longitude. New Caledonia lies about 200 miles south-west of the most southern part of the group, and the southern extremity of the Solomon Islands is about the same distance due west of the northern part; while the Fiji Islands, more than 400 miles distant, are the nearest land to the east.

These islands were discovered by Mendaña during his second expedition in 1595, and an unsuccessful attempt was made to settle on them. They have since been visited by many exploring expeditions. That of La Perouse was wrecked on Vanikoro Island, the second in importance of the Santa Cruz group, in 1788, and was never more heard of, but the search after it led to much exploration of the Pacific. The most recent account of the islands is that of Lieutenant Markham, who visited nearly every island in 1871 and 1872, and has given an excellent summary of all previous explorations, and of the present condition of the islands and their inhabitants.[1]

There are three distinct groups of these islands, divided from each other by about 60 miles of sea; namely, the south New Hebrides, the north New Hebrides with Banks' Islands, and the Santa Cruz islands, with the small Duff and Swallow groups; while east of the latter, at a distance of sixty miles, are the small isolated islets of Tucopia, Cherry, and Mitre.

The southern New Hebrides consist of five islands. The largest and most northerly is Erromango, 30 miles long by 22 broad, and rising to a height of 3000 feet. To the south of this, at a distance of about 30 miles, is Tanna, 18 miles long by 10 broad, and with a mountain about 3000 feet high. Nearly 40 miles S.S.E. of Tanna

[1] "The New Hebrides and Santa Cruz Groups," by Lieutenant A. H. Markham, R.N.—*Journal of the Royal Geographical Society*, 1872, p. 213.

VILLAGE IN VANIKORO.

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is Anciteum, 17 miles long by 11 broad, with a peak rising 2788 feet high. To the east are two small hilly islands, Amwa and Fotuna, each only three or four miles across.

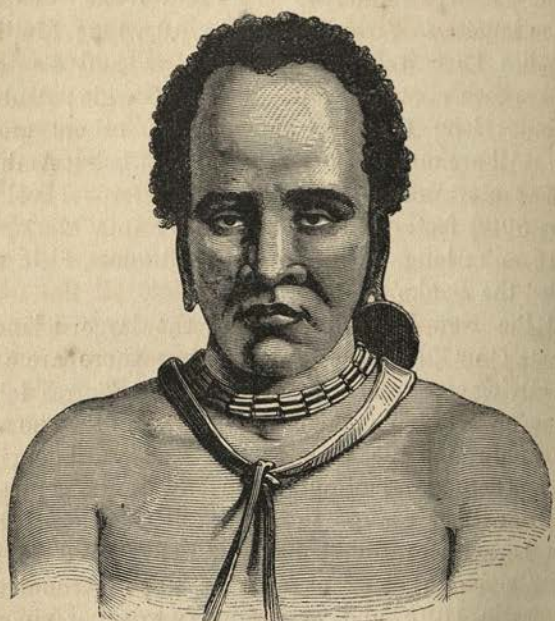
The northern New Hebrides and Banks' Islands, which really form only one group, consist of about thirty-five islands, besides numerous islets and rocks. Espirito Santo, the largest, is 75 miles long by 40 wide; Mallicolo is 50 miles long by 20 wide; Aurora and Pentecost Islands are each about 30 miles long by 5 wide; Ambrym is 22 miles long by 17 wide, and the others are all smaller. All are mountainous, the highest being Ambrym, 3500 feet elevation, except the small Lopevi volcano, which is 5000 feet. Vanua Lavu and Santa Maria, each about 15 miles long, with several small islets, form what are called the Banks' Islands.

All the New Hebrides and all the larger islands of the Santa Cruz group are volcanic, but there are a few small outlying coral-reef islands, such as the Torres Islands and those north of Tinacula or Volcano Island. The active volcanoes are Tinacula, Ureparapara, Ambryn, Lopevi, and Tanna. There are boiling springs in Vanua Lavu, and numerous extinct craters in all the islands. All these, except Lopevi, were in eruption in 1872, and Tinacula appears to be in constant activity, since Mendaña saw eruptions in 1595, and almost every voyager since has noticed either smoke or flame issuing from it.

Round most of the islands the water is very deep close up to the shore, and the hills rise abruptly from the sea, clothed with a dense vegetation. Cocoa-nut palms abound inland as well as on the coast. Casuarinas and ferns are plentiful, and there are abundance of fine forest trees and beautiful flowers. There appear to be no indigenous terrestrial mammals except rats, and the variety of birds is far less than in the Solomon Islands and New

Caledonia. Here are no cockatoos or crimson lories, but there are two species of lorikeet (Trichoglossus). There is also a species of megapodius.

The inhabitants of the New Hebrides vary considerably from island to island, and bear all the marks of the intermixture of two or more races. The people of Erro-



CHIEF OF VANIKORO, SANTA CRUZ ISLANDS.

mango and Mallicolo are the lowest, being short in stature, very dark and ugly. Those of Tanna are very similar, but more pleasant and cheerful. In Sandwich Island and Santa Cruz they are taller, but equally coarse-looking. In Vanua Lavu (Banks' Islands) they are a much better-looking race, short and plump, not very dark, with small features, but with short woolly hair. They are very quiet,

and are said in Fiji to make excellent house servants and nurses. Few or none of these people have the pronounced Papuan features, and they evidently belong to another type, which, for want of a better name, may be termed the Melanesian. It resembles more the Australian or Tasmanian in features, but is characterised by the woolly or frizzly hair of the Papuan. In some of the islands the men go absolutely naked, in others they wear the usual T-bandage. Their huts are all badly built, often consisting of a roof only, coming down to near the ground, sometimes with a raised floor inside, and the entrance is usually at the side, not in the gable end. Most of the New Hebrideans are excitable and treacherous, but they have been very badly used by the sandal-wood cutters and the "labour" dealers, who have often kidnapped them to take to Fiji or Queensland. In almost all the islands they practise cannibalism, often as openly as was formerly the case in the Fijis, the taste for human flesh being an insatiable craving that must be satisfied. They use bows and arrows and the usual clubs and spears, but many of them are now supplied with muskets.

In Aneiteum the people are said to have been once as degraded and savage as the rest, but they are now all Christians, and are found to be timid, kind, and docile. There has been no murder in the island for thirteen years, and crime of any kind is almost unknown. They are all becoming educated, and form a most interesting community. This is the bright side of the picture. The dark side is, that they once numbered 12,000, and now little over 2000. Epidemic diseases introduced by Europeans, and the too sudden change from the habits of barbarism to those of civilisation, everywhere destroy our most promising converts. There must surely be something wrong in the method of civilisation which has this one invariable effect. There are now eleven missionaries on different

islands, but on no others have they produced much impression. In Sandwich Island there are some European settlers, who grow cotton and make cocoa-nut fibre, and there are one or two Christian villages.

Some of the small islands are inhabited by quite a different race. Thus in Mele and Fili, two small islets close to Sandwich Island, there are perfect Polynesians or Mahoris, light-coloured, tall, and with almost straight hair, and speaking a Polynesian language. The same thing occurs in the Duff Islands, and in the small Cherry and Tecopia Islands.

There are at least twenty different languages spoken in the New Hebrides, not mere dialects but absolutely distinct languages, as diverse as Greek and English.[1] In the small island of Tanna alone there are no less than six, all mutually unintelligible. The New Hebrides form the chief recruiting-ground of the labour traffic; and the fact that no interpreters in these various languages exist, is sufficient proof that the natives, taken away under various pretexts to Fiji and Queensland, cannot possibly be made to understand where or for what they are going. There is much difference of opinion as to the effects of this traffic. Mr. A. Trollope, who has seen the natives at work in Queensland, thinks it must be beneficial; that the islanders learn lessons of civilisation and that work produces property; that they learn to sow, dig, plant, and to clothe themselves. Mr. F. A. Campbell, who has studied the returned labourer in his native place, gives a very different picture. He declares that the New Hebrideans are not in the least improved but rather injured, by their three years' labour. Whatever goods they bring home are at once distributed among their friends and relations; they throw off their clothes, paint themselves, and resume with eager delight all the savage

[1] F. A. Campbell, *A Year in the New Hebrides;* Melbourne, 1873, p. 146.

practices they have so long been deprived of. The only accomplishment they bring back, and of which they are proud, is the facility of swearing in English. They not only relapse into their old ways, but become more degraded, if that be possible, and certainly more vicious; for the plantations turn out some of the most accomplished specimens of savage scoundrelism imaginable—men who have engrafted on their originally depraved nature the vices of civilisation but none of its virtues.

Many other evil results of the labour traffic are pointed out by Mr. Campbell and by other writers, and there can be little doubt that, viewed in every aspect, there is an overwhelming preponderance of evil in this modified slave trade. The absolute savage cannot be improved by taking him away from his natural surroundings and placing him under conditions and in the midst of a civilisation utterly beyond his comprehension. Whether he can be improved at all, except by a process which leads to the not distant extinction of his race, is very doubtful. The only plan that seems likely to succeed is the influence of Europeans of good character and limited in number, settled among them as cultivators of the soil. An agricultural mission established in an island from which miscellaneous European settlers and traders were strictly excluded, would be a most interesting experiment, and might possibly lead us to the discovery of a method of elevating savage races without necessarily exterminating them.

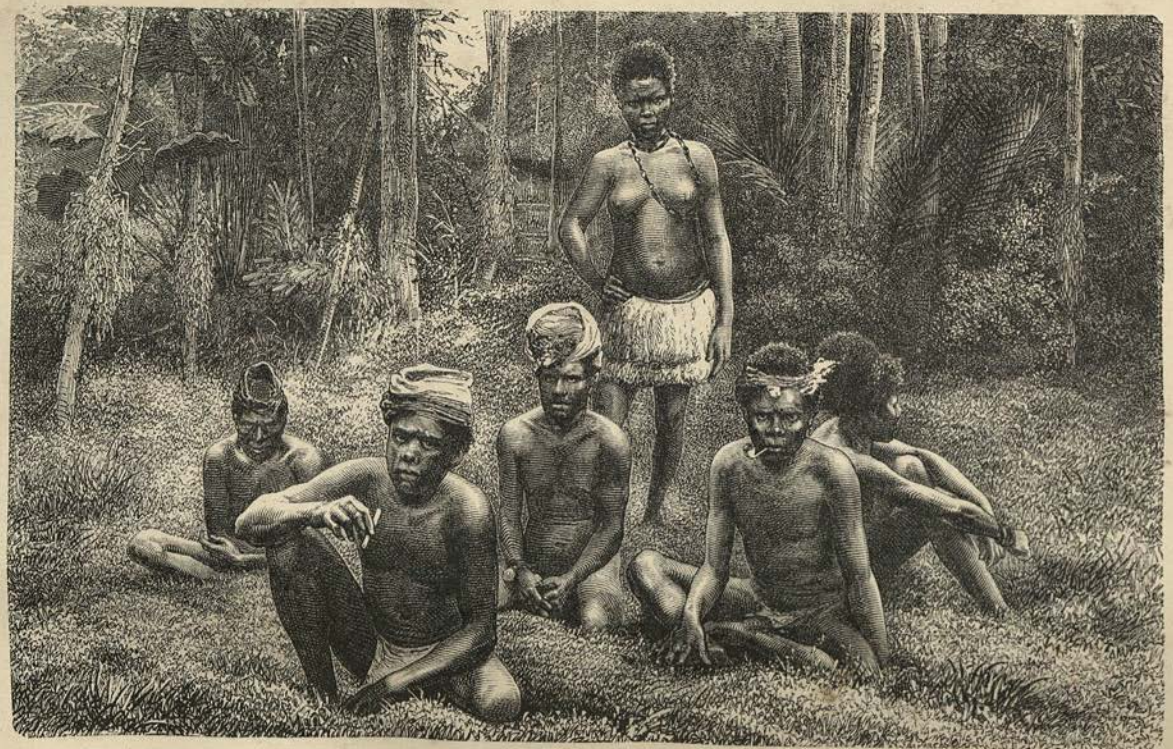
5. *New Caledonia and the Loyalty Islands.*

New Caledonia is the most southerly of the Melanesian Islands. It lies in a north-west and south-east direction, its northern extremity being on the same parallel as the most southern island of the New Hebrides, Anei-

teum, from which it is distant about 250 miles to the S.S.W., and it is about 700 miles from the nearest point of the coast of Australia. It is 250 miles long and 37 wide, with an area of about 6000 square miles. It lies in an almost perfect straight line, and retains a width of 25 miles and upwards to near both extremities. It is almost entirely encircled by coral reefs, which extend along the south side at a distance of from 5 to 18 miles from the shore, but approach somewhat nearer on the north, and extend a long way beyond its two extremities, so that, if they indicate the former extent of the island, it was once double its present length and width.

The island is very mountainous, with fine picturesque valleys, and towards the north a double range, with an extensive valley between them. The mountains approach nearer the east than the west coast, with many branches and isolated peaks, and with an extensive plateau towards the centre. Several of the peaks appear to have an elevation of from 4000 to 5000 feet, but the highest point has not been ascertained. The geological formation is chiefly sedimentary, consisting of schists, limestones, serpentine, and gneiss, with ancient plutonic rocks, but no volcanoes. It is rich in gold, but more so in nickel, a metal hitherto found in comparatively small quantities only, there being but few places in the world where its ores occur in sufficient abundance to allow of its being worked with profit. The most important nickel mines of New Caledonia lie on the east coast, and the most productive are those of Kannala and Ballarod in Ouailou. There is also abundance of copper ores, and a copper mine is worked near Balade.

New Caledonia differs from all the other islands of Melanesia in its drier and cooler climate, due to its position between 20° and 23° 20′ S. latitude. It is thus outside the equatorial belt of forests, and we find accordingly



NATIVES OF NEW CALEDONIA.

To face page 481.

that much of its surface is bare and arid-looking, or partially clothed with bushes and mast-like pines (*Araucaria cookii.*) In the north only, and on some of the mountain sides, is there any extent of forest country. There are, however, many fine timber trees, one of the most valuable of which is the aromatic Niaouli (*Melaleuca viridiflora.*) The zoology of the island is little known, but seems to be poor. Terrestrial mammals are probably wanting; while the birds exhibit a mixture of Australian and Polynesian forms, those characteristic of the New Guinea fauna being quite absent. One of the most remarkable birds is the *Rhinochetus jubatus* or Kagu, allied to the herons, but forming a distinct family.

The natives of New Caledonia are a well-made race with frizzly hair, dark skins, and pronounced features, the nose being large and greatly depressed at the root, as with the New Hebrideans. Captain Cook described them as being intermediate between the people of Tanna and Fiji, and Captain Erskine agrees that this accurately describes their characteristics. Cook also described them as being courteous and friendly, and not in the least addicted to pilfering—a character which subsequent writers have denied them. Like many other savages, they have probably been spoilt by association with Europeans. They differ from other Melanesians in having circular houses, well and strongly built, with a high conical roof surmounted with a carved post or finial. They cultivate yams, bananas, and sugar-cane, and are superior to every other race of the Pacific in their agriculture, irrigating their land with almost as much skill and care as the Balinese. Yet they use no clothing, and are said to be as thorough cannibals as the New Hebrideans. They offered a brave resistance to the French, and are far from contemptible opponents. Although possessing firearms, their chief tactics consist in falling on the enemy from

ingeniously devised ambuscades. Some tribes still number as many as 2000, but the native element is disappearing here no less rapidly than elsewhere in Oceania, wherever it has come into either friendly or hostile contact with the white man. Various local causes combine to accelerate the process in New Caledonia, where the natives are as quarrelsome and cruel towards each other as towards strangers. Family feuds are further fomented by polygamy, and the female births are far less numerous than the male, while the men themselves perish in large numbers by internecine warfare, intemperance, and domestic and foreign vices.

NEW CALEDONIAN FLUTE-PLAYER.

New Caledonia was taken possession of by France in 1853, and is used as a penal settlement as well as a colony. The chief town is Noumea or Port de France, a place of about 5000 inhabitants; and the country around it is said to resemble some parts of the Australian colony of Victoria. The cultiva-

tion of sugar, coffee, cotton, tobacco, and indigo, has been introduced. There are six sugar-mills in the colony, and the coffee and cotton plantations are said to be doing well. Cocoa-nut oil is also largely manufactured. Cattle, sheep, and horses, do well, and the wool is of superior quality, though as yet only produced in small quantities by the missionaries. Cattle, however, thrive best and are most profitable. Good roads, fortifications, public buildings, and a lighthouse, have been constructed by convict labour.

Notwithstanding the alleged pacification of the island, the relations of the aborigines and the colonists continue to be unsatisfactory. They are mutually suspicious of each other, and the whites have hitherto failed to render the natives serviceable labourers by proper food, fair wages, and humane treatment.

The Isle of Pines lies 30 miles from the south-eastern extremity of New Caledonia and is about 8 miles across. It is a raised coral island, the centre forming a plateau about 250 feet above the sea-level, and is remarkable for the abundance of araucarias and sandal-wood. Many massacres occurred here among the early traders, but some Englishmen have long been settled there, and found that with proper treatment it was not difficult to obtain the goodwill of the natives. It is now used by the French as the residence of those prisoners who are not condemned to labour.

THE LOYALTY ISLANDS form a small chain parallel to New Caledonia from which they are distant about 70 miles. They consist of three principal islands, Ouvea or Uea, Lifou, and Maré. They are all coralline and comparatively sterile, but they abound in sandal-wood, which has caused them to be much visited. Araucarias also abound here, as in the larger island. Lifou, the largest and central island of the three, is 35 miles long by about 15 wide. Uea, the smallest, consists really of two islands,

and is not above the sixth part the size of Lifou. Maré, to the south, is about half as large as Lifou. None of them rise more than 300 feet above the sea, and only Uea has a good harbour formed by a surrounding reef. All the islands were once thickly peopled, but they have now greatly diminished. The inhabitants closely resemble the natives of the New Hebrides, the "Chief of Maré" and "Man of Tanna," figured in Captain Erskine's book being so much alike that they might be taken for brothers. Thirty years ago they were cannibals and altogether thorough savages, though they appear to have been more moral and more kindly than the New Hebrideans. Now they are, in Maré especially, the most civilised of any Melanesians. On Maré most of the people are Christians; they build good houses, work, trade, and save money. In the other islands they are more backward. They all build double canoes, and they use neither kava nor betel. There is, however, a mixture of two races, and in Uea especially there is a regular colony of Polynesians who are said to have come from Wallis Island not more than two generations back. A similar immigration of the dark race seems to have occurred from Maré to Maer or Murray Island in Torres Straits, the people of which are said by Jukes to resemble those of the Loyalty Islands and New Caledonia.

6. *The Fiji Islands.*

The Fiji, or more properly Viti, Archipelago lies east of the New Hebrides between the 16° and 20° S. latitude, and the 177° and 182° E. longitude. It is beset with coral reefs, and embraces altogether 254 islands and islets, including two of considerable size, Viti Levu being about 90 miles long by 60 wide and of an oval shape, while Vanua Levu is rather longer but much narrower and more irregular. Both are very mountainous, the latter having

peaks which rise to about 5000 feet above the sea-level. They are of volcanic origin, well wooded, and extremely fertile.

The east or weather side is the most luxuriant, and teems with a dense mass of vegetation, huge trees, innumerable creepers, and epiphytal plants. Here no break occurs in the green mantle spread o'er hill and dale except where effected by man. On the lee side the aspect is very different—a fine grassy country here and there dotted with screw pines. The dense vegetation is thoroughly tropical in aspect; but some of the more open parts have quite a South Australian character, owing to the presence of phyllodineous acacias, two casuarinas, and several kinds of metrosideros. On the mountains, above 2000 feet elevation, we find hollies; myrtaceous, melastomaceous, and laurinaceous trees; epacridaceous and vaccinaceous bushes; with bright-coloured orchids, and delicate ferns and mosses; but no true alpine vegetation has yet been discovered. There are many perfumed barks and woods, but sandal-wood is confined to the south-western parts of Vanua Viti, where it is now very scarce.

The only terrestrial mammal is a rat, probably introduced by Europeans, and the dog, pig, and fowl were domesticated when the islands were first visited. The birds are tolerably numerous, and resemble those of the Tonga and Samoa groups farther east. They are allied to Australian and especially Polynesian forms. Lizards are comparatively abundant and varied, but there are only two snakes, while there are several kinds of tree-frogs.

The Fijians are a dark-coloured, frizzly-haired, bearded race, reproducing in the east the tall and muscular bodies of the finest of the western Papuans, but much superior to them both in regularity of feature and in degree of civilisation. They exhibit, however, a considerable amount of intermixture with the brown Polynesians of

Tonga and Samoa, who have long ago established colonies in the Fiji Islands, and have to some extent modified both the customs and the language of the indigenes. Yet they remain undoubted Melanesians, and differ from

NATIVE OF FIJI.

their Mahori neighbours not only in their scanty dress, which hardly differs from that of the savage New Hebrideans, but in using the bow and arrow and in making pottery, both arts being foreign to the true Polynesians.

The people have a regular system of government under chiefs of tribes, of whom there are twelve or thir-

teen. They have priests and temples, a complex mythology, and a firm belief in a future state. Their manners and morals are in many respects those of a civilised people, yet perhaps nowhere in the world has human life been so recklessly destroyed, or cannibalism been reduced to such a system, as here. Human flesh was, and is still in many parts, the Fijian's greatest luxury, and not only enemies or slaves, but sometimes even wives, children, and friends, were sacrificed to gratify it. At great feasts it was not uncommon to see twenty human bodies cooked at a time, and on the demand of a chief for "long pig," which is their euphuism for a human body, his attendants would rush out and kill the first person they met, rather than fail to gratify him. No less horrible were the human sacrifices which attended most of their ceremonies. When a chief died a whole hecatomb of wives and slaves had to be buried alive with him. When a chief's house was built, the hole for each post must have a slave to hold it up and be buried with it. When a great war-canoe was to be launched, or to be brought home, it must be dragged to or from the water over living human beings tied between two plantain stems to serve as rollers. Stranger still, and altogether incredible, were it not vouched for by independent testimony of the most satisfactory character, these people scrupled not to offer themselves to a horrible death to satisfy the demands of custom, or to avoid the finger of scorn. So firm was their belief in a future state, in which the actual condition of the dying person was perpetuated, that on the first symptoms of old age and weakness, parents, with their own free consent, were buried by their children. A missionary was actually invited by a young man to attend the funeral of his mother, who herself walked cheerfully to the grave and was there buried; while a young man who was unwell and not able to eat, was voluntarily buried

alive, because, as he himself said, if he could not eat he should get thin and weak, and the girls would call him a skeleton, and laugh at him. He was buried by his own father; and when he asked to be strangled first he was scolded and told to be quiet, and be buried like other people, and give them no more trouble; and he was buried accordingly.[1]

The weapons of the Fijians consist of spears, slings, clubs, short throwing-clubs, and bows and arrows. Most of these are larger and heavier than those of other Pacific islanders, corresponding to the more warlike character and greater strength of the people. Their towns are often fortified with an earthen rampart, faced with stones, and surmounted by a fence of reed or cocoa-nut trunks. Their houses are oblong, 20 to 30 feet long, well built, and with doorways on the two sides four feet wide, and only about the same height. The doors are of mats, and the floor at the ends is raised a little, and covered with mats for sleeping on. They have pyramidal temples often erected on terraced mounds, but many of these have now been destroyed. Their canoes are well built, and sometimes more than 100 feet long, usually double, of unequal size, the smaller serving as a powerful outrigger. Their agricultural implements are digging sticks and hoes made of turtle-bone or flat oyster-shells, now replaced by iron. They are skilful in basket and net making.

The Fijians are cleanly in their habits, and very particular about their personal appearance. They do not load themselves with ornaments like the more savage Melanesian tribes, and the women only are tattooed. Although so scantily dressed, they are essentially as modest as the most civilised nations, and any public in-

[1] Erskine's *Journal of a Cruise among the Islands of the Western Pacific*, p. 475.

decency would be severely punished. Though they have learnt many arts from their intercourse with the Samoans

FIJI TEMPLE.

and Tongans, it is the general opinion that they are superior to the Polynesians in intelligence.

In no place has missionary effort been more success-

ful, or its fruits more apparent, than in Fiji. It is only forty years since the first missionaries landed at Lakemba, one of the small eastern islands of the group, at a time when all the horrors of cannibalism and massacre were at their height. Now there are no less than 30,000 converts, while 50,000 children attend the mission schools. The king, Thakombau, who long opposed them, has been converted, and cannibalism and human sacrifices have been abolished in all the coast districts and the smaller islands, even if they still linger in the interior of Viti Levu. This great change has been wholly effected by the Wesleyan missions, assisted latterly by the Roman Catholics, and still more recently by the Church of England.

In 1874 the entire archipelago became a British colony under a deed of cession from Thakombau, who had long established his power as a supreme ruler over all the petty chiefs of the various islands. Besides the two large islands already described, we have Taviuni, a fine island about thirty miles long, situated near Vanua Levu. It is exceedingly beautiful and luxuriant, with a mountain 2500 feet high, having a lake on its summit, probably the crater of an extinct volcano. Kandavu, to the south of Viti Levu, and nearly as large as Taviuni, is mountainous and thickly populated, and is the island at which the mail steamers call. Ovalou, on the east side of Viti Levu, has a fine harbour at Levuka, the principal European settlement, and hitherto considered the capital of the group. It is now decided, however, that the capital shall be changed to Suva, a harbour on the south of Viti Levu. Lakemba is the largest of the eastern islands, and is the head-quarters of the Wesleyan Mission. It is nearly round, and about six miles in diameter. Other islands are Koro, Korotuna, Nuka Levu, Vanua Balavu the chief settlement of

the Tonga men, Vanua Vatu, Moala, Totoya, Matuka, Vatulele, the Vasawa group on the north-west of Viti Levu, and many others.

The native population is estimated at about 150,000, the European about 1600. Two newspapers are published at Fiji, besides a native paper at irregular intervals. The government is absolute, consisting of a Governor, assisted by an executive council and legislative assembly, both nominated by the Governor. Maize, sugar, and cotton are cultivated, but the most important article of export is the cocoa-nut, dried in the form termed copra, this being exported to the value of £42,000, while the next article in importance, cotton, reached only £12,000, and sugar £9,000. No roads or public works of importance have yet been executed in the islands.

CHAPTER XXIV.

POLYNESIA.

1. *Extent and Component Groups.*

POLYNESIA comprises a number of distinct archipelagoes, on which are dependent some few smaller groups. The westernmost is the Tonga group, with the Samoa a little to the north-east. Between these are a few scattered islands, and north of Samoa the small Tokelau cluster, to the north-west of which is the Ellice group, or Lagoon Islands of the missionaries. The space between Tonga and the Society group is occupied by the scattered Hervey Islands; and with the Society may be included the Austral or Tibuai Isles, south of them, and the great Paumota, or Low Archipelago, east of them, with Rapa-nui, or Easter Island, still farther east. North of the Paumota lies the Marquesas group, west and north-west of which are several small scattered islands, which have been disposed in three clusters—the Penrhyn or Manahiki north of the Paumota, the Phœnix north of Tokelau, and the America north of the Penrhyn. The last Polynesian archipelago is that of the Hawaii, or Sandwich Islands, situated far away on the northern tropic, with which may be included a chain of smaller islets stretching thence towards the north-west.

2. *The Polynesian or Mahori Race.*

As the whole of the Polynesian islands are inhabited

by one race, which differs very little in the several islands, it will be well to give here a brief general description of this interesting people.

The Mahoris or Brown Polynesians, according to the universal testimony of travellers and residents, are one of the very finest races on the globe. A recent writer says—"There are no people in the world who strike one at first so much as these Friendly Islanders. Their clear, light copper-brown coloured skins, yellow and curly hair, good-humoured, handsome faces, their *tout ensemble*, formed a novel and splendid picture of the genus *homo*; and, as far as physique and appearance goes, they gave one certainly an impression of being a superior race to ours."[1] Captain Erskine, speaking of the same people, says—"The men were a remarkably fine-looking set of people, and among them were several above six feet high, and of Herculean proportions. One stout fellow attracted attention as soon as he crossed the gangway, and I found that his arm measured above the elbow 15½ inches, whilst that of one of our forecastle men, probably the stoutest man in the ship, was but 14 inches." And again—"The manly beauty of the young men is very remarkable; one in particular, who had decked his hair with the flowers of the scarlet hibiscus, might have sat for an Antinous. Their features are often beautiful, although the nose is somewhat flatter than with us; but this, I believe, is done by the mothers in the children's early youth as an improvement to their appearance." This practice, which is commenced as soon as the child is born, must broaden and to our eye disfigure the nose, which is naturally rather long and somewhat arched, as shown by portraits, and can hardly differ in its normal state from that of good-looking Europeans. The hair is dark-brown or black, smooth and curly, totally unlike either the frizzled mop of the Melanesian or the

[1] Lord George Campbell's *Log-Letters from the 'Challenger,'* p. 120.

perfectly straight black hair of the true Malay. They have little beard generally, though sometimes it grows pretty freely. Their average stature is fully equal to that of Europeans. The form of their heads is broad, high, and flattened at the back; the latter feature may, however, be artificial. In character they are cheerful and joyous, fond of dancing and song and a variety of amusements. Although ceremonious and stately in many of their customs, gloom and moroseness are contrary to their nature. They are very cleanly in all their habits, and have a taste for neatness and order such as never exists elsewhere among people in a barbarous state. Though without written language, they have abundance of songs and traditions, handed down from one generation to another, as among the ancient bards of our own country.

Although entirely without metals, their native manufactures are very beautiful. They make mats of extreme delicacy, and bark cloth, beaten out to the thinness of fine paper, joined together in rolls sometimes hundreds of yards long, and ornamented with graceful patterns in various colours. They make bowls and plates of wood, and cups and bottles of cocoa-nut shells, beautifully carved and polished. The handles of their tools and clubs and paddles are carved with a marvellous elaboration, and with great taste, their only tools being formed of stone or shell. Their canoes, sometimes more than a hundred feet long, take many years to build, and are marvels of ingenuity and constructive skill, the planks accurately fitted and fastened together by strong cords, so as to resist the strain of voyages of many hundreds of miles in the open ocean. Their houses are of an oval form, supported on two lofty central pillars, and resting on a row of dwarf posts, the roofs strongly formed of rafters and thatch. They have no bows and arrows, and had never discovered the art of making pottery; yet, as they are

undoubtedly in a far higher state of civilisation, and far superior in mental capacity to many savage races who possess that art, it is a proof that we cannot measure the status of human advancement merely by progress in the mechanical arts. Having no vessels to boil water, their cooking is entirely performed by baking, generally in holes in the ground, a method which, although rude in appearance, is really so perfect that we cannot wonder at their not seeking for any other.

Their clothing is simple, consisting of the ordinary T-bandage for the men, and for the women a neat girdle or petticoat formed of dracæna leaves. Sometimes the women use also a garment like the Peruvian poncho to cover the upper part of their bodies, and on state occasions the men drape themselves in voluminous folds of the beautiful "tapa" cloth. All the men are tattooed from the navel to the thigh, and also often around the mouth and eyes, in a variety of tasteful patterns, making them look as if the body were covered with a close-fitting garment of delicate lacework.

These people show how far they have advanced beyond the savage state in nothing more than in their treatment of women, who are no longer beasts of burden or slaves, as among all Melanesian and many Malay tribes, but companions and equals, carefully protected from severe labour or anything that might impair their grace and beauty. The Mahori women devote themselves solely to household work, making mats and tapa cloth, plaiting ornamental baskets, and such light out-door employments as fruit-gathering and fishing, which in their delightful climate is pastime rather than labour.

The Polynesians have for the most part a regular government of chiefs, and a rude religion kept up by priests as the interpreters of the will of their numerous gods, to whose honour lofty temples were raised on mounds

of earth. They are warlike, but have none of the savage thirst for blood of the Fijians. They are great orators and undaunted sailors. Their ceremonies are polluted by no human sacrifices; cannibalism with them has never become a habit; they are kind and attentive to the sick

ANCIENT TOMB, TAHITI.

and aged, and unlimited hospitality is everywhere practised. The chiefs work as well as the common people, and think it a disgrace if they do not excel in all departments of labour. When first visited by Europeans they appear to have been remarkably healthy, and the islands were very populous. Captain Cook estimated that the Society Islands then possessed 1700 war-canoes,

manned by 68,000 men. Now, the total population of the group is said to be only 9000! Such has been the effect of contact with European civilisation on a people declared by our great navigator, Cook, to have been "liberal, brave, open, and candid, without either suspicion or treachery, cruelty or revenge;" while the naturalist, Forster, who accompanied him, declared, that he "never saw any of a morose or discontented disposition in the whole nation;" and that "they all join to their cheerful temper a politeness and elegance which is happily blended with the most innocent simplicity of manners." How sad it is that a people with so many admirable qualities should be exterminated before our eyes by the relentless march of our too imperfect civilisation!

The traditions of the Polynesians point to Savaii, the largest of the Samoan Islands, as the home of their ancestors; and many peculiarities in language and local nomenclature indicate that the various branches of the race, from the Sandwich Islands to Tahiti, and even to New Zealand, have migrated from this centre. Raiatea, 120 miles west of Tahiti, is another mythological centre to which many traditions refer; as well as Rarotonga, almost midway between Tahiti and Samoa. These may be real indications as to the process of dispersion of the Mahori race, but are of little value in determining their origin or first entrance into the Pacific, which must be far too remote an event for legend to afford any trustworthy indications. Their antiquity is proved by language and by customs. The languages of all the brown Polynesians are dialects of one common tongue; and because many Malay and Javanese words occur in all these dialects, it has been hastily assumed by many writers that the Mahoris are really Malays, and came direct from the Malay Archipelago, passing by the islands inhabited by the fierce Melanesians till they found unoccupied lands farther to the east. But

a more careful study of the Mahori language shows that it is radically distinct from the Malay, in grammatical structure no less than in vocabulary, and that the Malay words after all do not exceed three or four per cent, and are, besides, mostly modern words, not modified roots,—a clear indication of their recent origin.[1]

Not less clear, as evidence of the very remote antiquity of the Polynesians, is the absence of the art of making pottery among the whole of the race; for it implies that they left the continent or the western islands before that art was known, its practice being so simple and at the same time so useful, that, once known, it would certainly never have been lost. But on all the great continents and continental islands this is a universal and a very ancient art. There is not a single tribe in the whole Malay Archipelago but what possesses it; and there is evidence in many parts of the world that it dates far back into prehistoric times, and even into the polished stone age. In Eastern Asia, where it attained a high development much earlier than in Europe, it is certainly of extreme antiquity.

We have already seen that their tall stature, their curly hair, their well-formed and rather prominent features, their joyous and laughter-loving dispositions, all separate these people widely from true Malays. Yet they have many characteristics of an Asiatic race, and Mr. Ranken states that Chinese in Tahiti may sometimes be mistaken for natives. It seems probable, therefore, that they came originally, but at a very remote epoch, from some part of Southern Asia, and that they found the islands more or less occupied by dark Melanesians, whom they have displaced, but with whom they partially intermixed. The direction of this migration was probably by

[1] W. L. Ranken, "South Sea Islanders;" in *Journal of the Anthropological Institute*, 1877, vol. vi. p. 243.

the chain of small islands east of the Philippines; and it may be that during the long progress of migration over 3000 miles of ocean, from island to island—all without exception small flat coral-islands—a process which would probably extend over scores or hundreds of generations, the art of making pottery might have been lost for want of suitable materials. Savaii would be the first lofty and luxuriant island of considerable area that they would meet with, and here they would remain till an overflowing population drove them to seek fresh lands farther east. A slight mixture with the higher class of Melanesians has occasionally taken place, and has tended to produce the tall and bulky bodies, the pronounced features, and the slightly curly or wavy hair which distinguishes them from all Mongolian tribes; while it has never been sufficient materially to affect the general lightness of their colour, which has, moreover, been favoured by the preference for the fairest women which they invariably show.

3. *The Tonga, or Friendly Islands.*

South-east of Fiji lie the Friendly Islands (Tonga), divided into three sub-groups by two narrow channels. In the southern cluster lies Tongatabu, the largest island of the archipelago. They are surrounded by dangerous coral reefs, and though the soil is fertile, there is a lack of flowing streams. The natives, belonging to the fair Polynesian race, surpass all other South Sea islanders in mental development, in the structure of their dwellings, and preparation of their implements, weapons, dress, etc., betraying considerable skill and dexterity. The northern and central cluster form the state of Vavao.

These islands were discovered by Tasman in 1643, and were visited by Captain Cook in 1777. They are all low, consisting either of raised coral or volcanic de-

posits, and there are still several active volcanoes among them. Tufoa, to the west of Hapai, is always smoking; Latte, south-west of Vavao, is also active, as is Amurgura, to the north-west; and there are several other extinct cones. The last-named island was in eruption in 1846, before which date it was inhabited, and covered with verdure and fruit-trees. It then blew up with an explosion which was heard 130 miles off, and was reduced to a huge mass of lava and burnt sand, without one leaf or blade of grass of any kind. The people had all escaped, warned by violent earthquakes which preceded the eruption. The sea was covered with ashes for more than 60 miles, and the trees and crops at Vavao were seriously damaged.

The Tongan dialect is harsher than the Samoan, and is supposed to have been influenced by contact and intermixture with the Fijians. The people are now all Christians, but, as in almost every other instance, they are diminishing in numbers. In 1847 the population was estimated by the missionaries at 40,000 or 50,000, which has now diminished to about 10,000. The chief exports are timber, cocoa-nuts, and coir; while ships obtain ample supplies of fruits and vegetables. The people are admirable boat-builders and sailors, visiting all the adjacent groups in their fine canoes.

In the southern part of Tongatabu there is a remarkable ancient monument, consisting of two perpendicular rectangular blocks of stone, about forty feet in height, supporting a large slab across the top, surmounted in the middle by a large bowl of the same material. Its history is entirely unknown, and the stone of which it is composed is said to be not found on the island. A figure of this most interesting monument is given in Mr. Brenchley's *Cruise of the Curaçoa;* and, taken in conjunction with other stone monuments scattered widely over the islands

of the Pacific from the Carolines to Easter Island, it leads to the conclusion that some other race, with a different if not a higher civilisation, preceded those which now exist.

ATOLL IN THE SAMOA GROUP.

4. *The Samoa, or Navigator's Islands.*

North of Tonga 350 miles, is situated the Samoa or Navigator's group, consisting of four larger and several smaller islands, with a total area of 1200 square miles. The larger members of the group are Sawaii, Upolu, Tutuila, and Manua. Upolu contains the principal harbour and chief town, Apia. Here also is the peak of Tafua, 2500 feet high, forming a perfectly round lava cone and crater completely filled with a dense forest. Samoa may be regarded as one of the loveliest, most agreeable and productive of all the South Sea groups. The fertility of the soil is such that the cultivation of tropical plants yields abundant

returns, and the means of subsistence are perhaps more easily obtained here than in any other part of the world.

All these islands are volcanic, and their appearance is said to be enchanting, fine fertile plains extending to the foot of the wooded hills. Savaii, the largest island, is the least fitted to support a large population, having been so recently subject to volcanic action that much of its surface is absolutely sterile. It has many extinct craters, chief among which is the lofty peak of Mua, which rises to a height of 4000 feet. Going inland from the district of Aopo, the traveller passes over a tract of country thickly strewn with scoriæ and ashes, which are evidently of very recent origin, so that the native tradition of the last eruption having taken place only 200 years ago is probably correct. In the north-west of the island are also many miles of lava-plains, but little altered; and in the east there is an older and larger lava-bed partly decomposed and covered with a scanty vegetation. In spite of a considerable rainfall, Savaii possesses no rivers, owing to the porous nature of the vesicular lava, which offers a large extent of heated surface, so as to evaporate the greater part of the moisture, while the remainder sinks down and appears as springs near the coast. The mountainous interior is thus entirely waterless and barren, so that even the natives cannot traverse it. It is a solitude destitute of animal life, alternately parched by a tropical sun and deluged by fierce rain-storms, and affording neither food nor permanent water. The narrow belt of fertile soil which in places extends between the mountains and the sea, is, however, exceedingly beautiful, covered with a luxuriant vegetation, and with lofty groves of cocoa-nut and fruit trees. Here, and in some of the more fertile valleys, are congregated the scanty population of the island, who are said to be more warlike and less friendly

to foreigners than the inhabitants of the smaller but more fertile and more populous islands.[1]

The Samoan Islands are very subject to hurricanes, and in April 1850 Apia, the capital, was almost entirely destroyed by one. Earthquakes are also frequent, but not very severe; and they do little damage owing to the elasticity and strength of the buildings, entirely constructed of posts and light rafters securely lashed together. The *Didunculus strigirostris*, a remarkable ground pigeon, forming a distinct family, is found only in the island of Upolu, where it is very rare, and will probably soon become extinct.

The Samoans are said to be the fairest of all the Polynesian races, and although not so much advanced in the arts and manufactures as some of their neighbours, surpass them all in many of the characteristics of a true civilisation. Captain Erskine remarks that they carry their habits of cleanliness and decency to a higher point than the most fastidious of civilised nations. Their public meetings and discussions are carried on with a dignity and forbearance which Europeans never equal, while even in the heat of war they have shown themselves amenable to the influences of reason and religion. The Rev. George Turner describes how, in 1848, during one of the local wars, on the day after a battle, a party of warriors from a fleet of fifteen canoes landed in pursuit of their enemies, who, they expected, were concealed on the mission premises. In great excitement, and with arms in their hands, they searched the houses, and finding no one went off in their canoes, when one of them stood up in the bow of his canoe and made the following speech:—"Just one word to you the missionary, and to you the teachers, assembled in that sacred seminary. Bear with us in this

[1] "The Navigator Islands," by Litton Forbes, M.D. *Proceedings of the Royal Geographical Society*, 1877, vol. xxi. p. 140.

rude conduct. Before we leave, tell us if you have missed anything. Teachers! be steadfast. Yours is the right course. Our hearts are not in this wicked work. Keep close to the cause of God. That is where our hearts are, and we hope ere long to be there ourselves. Health and prosperity to you all!" And he states that, during a nine years' war, none of the parties ever fought on Sunday.

The former warlike and rapacious character of the Samoans has, in fact, undergone a complete change since the year 1836, when the archipelago became a chief centre of missionary zeal. Besides schools and churches, there exist several institutions for the training of teachers; and in the above-mentioned capital, where reside the foreign consuls, many European traders have also settled down.

In Samoa German commercial interests have acquired greater expansion than is generally supposed, and the transactions of the German houses, mostly connected with the Hamburg trade, have here been followed by the blessings of a well-regulated social culture amongst the natives.

The cocoa-nut palm is largely cultivated for exportation, besides cotton, coffee, and maize. Here also various local products are bought up, and consigned, as return cargoes, on board the vessels importing hardware, implements, and other manufactured goods from Australia. The great importance of the seaport of Apia is due to the fact that it has become the emporium of the produce of all the other Pacific islands, Tahiti and the neighbouring groups alone excepted. The scarcity of labour, however, forms a great obstacle to the economical cultivation of the cocoa-nut palm in Samoa. To supply this want, the natives of the Carolines and Marshall Islands have, in recent years, been frequently introduced, these settlers

contracting to serve for four or five years. They are readily attracted by the inducements of better nourishment, good dwellings, and kind treatment they receive in the settlements, which are managed after the European fashion, so that there is now no lack of coolie labour. Since 1872 the United States have assumed the protectorate of the Samoa group, and have established a coaling station at the commodious harbour of Pango-Pango, in Tuluila. By means of the steamers plying between San Francisco and Australia, Pango-Pango now communicates with both hemispheres, and its trade has accordingly of late years become very brisk. In 1869, 57 vessels, of 15,672 tons burthen, entered the ports of this group. The population is variously estimated at 35,000 or 60,000.

5. *Savage Island.*

Savage Island, or Niuë, situated nearly midway between the Tonga and Samoa groups, is a small island, about nine miles long, of raised coral rock, and interesting as having a population of mixed Samoan and Melanesian blood. They speak a Samoan dialect, and they say their ancestors came from that island; but they found a black population, with whom they have intermixed. They are now wholly converted to Christianity, and are found to be a very intelligent, mild, and interesting race, and by no means the dangerous savages they were long supposed to be. Their numbers, in 1864, were over 5000, and they are said to increase at the rate of 2½ per cent annually. If this be true, we may probably attribute it to the fact that the island is too small to attract any visitors other than the missionaries; and it becomes most valuable evidence that Polynesians may be civilised without being exterminated, if they are only protected from the rude competition, the vices, and the diseases which free inter-

course with the ordinary class of Europeans invariably brings upon them. In Mr. Brenchley's *Voyage of the Curaçoa*, he has given a most interesting account of this island and the condition of its population in 1865.

6. *The Union and Ellice Islands.*

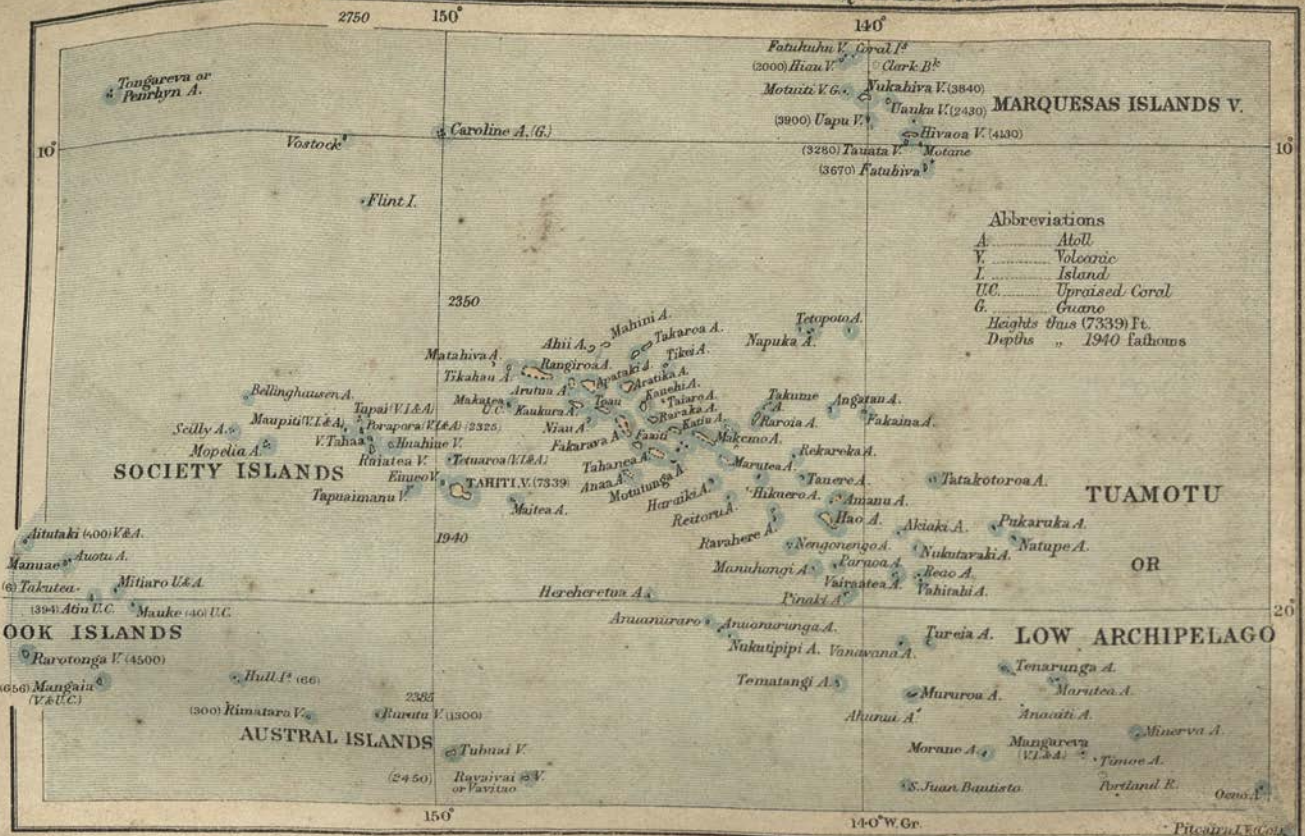
The little Tokelau or Union group lies about 350 miles N.E. of the easternmost of the Navigator group, and consists of three small islands, inhabited by a people closely resembling the Samoans, and speaking an allied dialect. The population is about 500, and the islands are occupied by Americans, who work the guano deposits.

The Ellice group is about 700 miles N.W. of Savaii, and consists of a number of low coral islands and atolls. The population of about 2500 are all Christians. They speak a dialect of the Samoan language, and say they came from Samoa thirty generations back. They have a very ancient spear or staff, which they say they brought from Samoa, and they name the particular valley they came from. This valley was visited by a missionary, to whom they lent this spear, and he found there a tradition of a large party having gone to sea and never returning, and, moreover, that the wood the spear was made of was of a kind that grew there. We have here proof that traditions of migrations among the Polynesians may be trusted, even when so remote as thirty generations, or 600 years. In 1863 three-fourths of the population of the island of Nukulaelae were kidnapped by Peruvians, under the pretence that they were expected missionaries from Samoa.

7. *The Hervey Islands or Cook's Archipelago.*

South-east of Samoa about 700 miles is the scattered

SOCIETY ISLANDS, LOW ARCHIPELAGO & MARQUESAS ISLANDS.



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Hervey or Cook Archipelago, consisting of nine islands, either volcanic or coralline, and rendered difficult of access by dangerous reefs and the absence of harbours. Rarotonga, the largest, is volcanic and hilly, with fertile and well-watered valleys. It is inhabited by people who have legends of their migration from Samoa, and speak a closely allied language. They say they found black people in the island; and the fact that they have more pronounced features, more wavy hair, and are darker and more energetic than the Samoans, is quite in accordance with this statement. In Mungaia, farther south, this Melanesian type predominates, the people being dark brown, with wavy or frizzled hair, and well bearded. They have still more prominent features than the Rarotongans, and wilder manners, and forty years ago were fierce man-hunters and cannibals. These people may, in fact, be considered the extreme eastern outliers of the Melanesian race, although still farther east there are found some indications of intermixture with a dark race.

The natives of this group have now become so civilised that all read the Bible, dress after the European fashion, and live in stone dwellings grouped in little townships under separate chiefs. Yet they are diminishing in numbers so rapidly that their total extinction can only be a question of time. They number at present scarcely more than 10,000, of whom 6000 are in Rarotonga alone. The islands produce cocoa-nuts, bread-fruit, bananas, coffee, cotton, and tobacco.

In Oparo, a small sterile island, eight miles long, there are remains of native forts of hewn stones on the summits of the highest hills. The stones are well squared and smoothed, and joined with a hard cement. Some of them are two tons weight.

PEAK OF MOOREA.

8. *The Society Islands.*

Of far greater importance than the preceding are the Society Islands, in the eastern section of Polynesia, a region which has been brought more or less directly under French influence. This nation may in fact be said to hold practical possession of the Society, Low, and Marquesas Archipelagoes, together with the Tubuai or Austral Isles.

VIEW ON THE SHORE OF TAHITI.

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The Society Islands, eleven in number, and forming a chain in the direction from north-west to south-east, are amongst the best known in the South Sea, and are divided by a wide channel into the Leeward and Windward groups. Amongst the former are the so-called four kingdoms of Huahine, Raiatea, Tahaa, and Borabora, where the natives, aided by the white settlers, have maintained a spirit of independence, keeping aloof from the rest of the confederacy that has accepted the French protectorate. The eastern group includes Eiomeo or Moorea, in the west, Maitea in the east, and Tahiti in the centre, this last famous for its enchanting scenery. All together have an area of 650 square miles, with a population of 18,000 souls.

TAHITI, the principal member of the group (600 square miles, with 14,000 inhabitants), is of volcanic origin, and thoroughly mountainous, rising like an amphitheatre in a succession of bold circular terraces towards the central peaks, and connected by a low narrow isthmus with a smaller and equally round and hilly islet. Its delightful and healthy climate brings to maturity all the products of the tropics, which are nowhere found in greater fulness and perfection than here. The wayfarer is soothed by the fragrance of sweet-smelling flowers, while his ears are ravished by the music of various songsters arrayed in the brilliant plumage of the tropics. "The trip along the north coast is enchantingly beautiful. The low-lying tracts stretching from the white shores of the lagoons to the steep slopes of the hills, are clothed in the richest and most varied vegetation, from the bright deep shades of the bread-fruit tree to the soft light green foliage of the young banana. Romantic valleys and gorges lead into the interior, with the outlines of Mount Orohena (7340 feet high) in the background. When visited for the first time, the effect of this scene is heightened as the

ship, suddenly rounding the last headland, brings into view the harbour of Papeete" (C. von Popp).

Tahiti is entirely formed of lavas and other volcanic

MOUNTAINS OF TAHITI.

products, but it is so very ancient, and has suffered so much denudation, that its craters have entirely disappeared, enormous valleys have been excavated, and a wide belt of excessively fertile soil been formed around its base. The American geologist Dana considered it to pre-

sent the most wonderful and instructive example of volcanic rocks to be found on the globe. Yet remains of plants and insects similar to those now living in the country are found under some of the ancient lava flows, showing that the formation, as well as the denudation, of the island is, geologically, a recent phenomenon.

This terrestrial Eden is peopled by one of the finest races in the world, whose slightly veiled, or even fully displayed, symmetrical proportions did not fail to excite the admiration of the first European discoverers. Recent opinions, however, are less enthusiastic on the subject, and Von Popp, amongst others, remarks that if we now look in vain for the gigantic race described by Captain Cook, their deterioration is due, partly at least, to civilisation and brandy; notwithstanding which the natives of Tahiti are still a fine, well-proportioned people, tall and robust, with dark-brown complexion, broad nose, slightly protruding lips, beautiful teeth, black and mostly curling hair, but with slightly developed beard. With Christianity some restraint has been introduced amongst the islanders, who formerly indulged in unbridled licentiousness. At present we must visit the interior in order to see, in their original forms, the seductive dances of the native women, gaily decked with flowers. But all this will soon vanish, with the people themselves, who, like the Sandwich Islanders, are decreasing with alarming rapidity. The idyllic scenes of former days have already mostly disappeared under the influence of the missions; the short and picturesque national garb has been lengthened and rendered unsightly; the Sunday songs and dances have been prohibited; and to harsh treatment, intemperance, and epidemics, thousands fell victims.

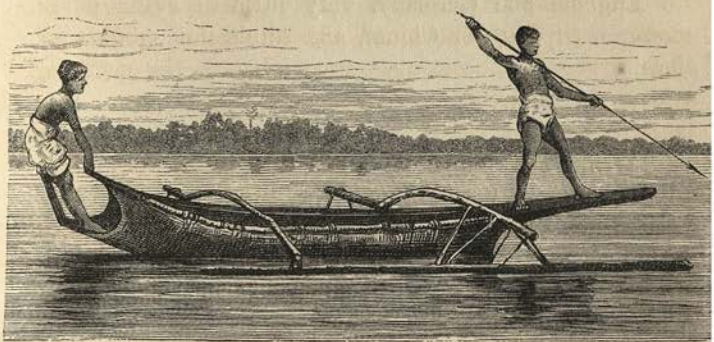
One chief cause, probably, of the decreasing numbers of these people is the prevalence of habits of intoxication in which they indulge as a substitute for the dance, and

song, and varied amusements, so injudiciously forbidden by the missionaries. A recent French traveller, M. Jules Garnier, informs us that the Tahitians now seek the mere sensual pleasure of intoxication, unenlivened by the social enjoyments of their ancient festivals. Most fatal gift of all, they have been taught to ferment the juice of the orange, so abundant and delicious in their island home, and thus produce a liquor with which to obtain the pleasures and the penalties of intoxication, which men, women, and children alike enjoy and suffer. The orange has been for these people as the forbidden fruit of the garden of Eden —the tree of good and of evil.

The natives themselves only cultivate sufficient to supply their daily wants, and sell the surplus produce of their orange and cocoa-nut groves; but on the southern side of the island, in the district of Atimanoo, there is a large agricultural establishment belonging to an English company, which possesses 10,000 acres of rich land, and has imported 1600 Chinese coolies to cultivate it. The forest has been cleared away, and the land planted with sugar-cane, cotton, and coffee, while broad roads bordered with plantains and fruit-trees traverse it in every direction. The establishment of this gigantic farm forms a small town picturesquely situated near the sea; and it is here that almost the entire quantity of cotton exported from Tahiti (over a million pounds in 1876) is produced.

The French protectorate is extended to the Society and Low Archipelagoes, and in its administration fully resembles that of an ordinary colony. Queen Pomare IV. of Tahiti is doubtless the reigning sovereign, but has been fain twice to suffer the indignity of being imprisoned with her state councillors by the French gendarmes, because she ventured to refuse her assent to some of the numerous decrees weekly appearing in the *Messager de Tahiti*. On the other hand, she enjoys the protection of

the French, quarters the "blue, white, and red" with the national "red, white, and red" of Tahiti, and those ships alone are permitted to trade with the other islands which hoist this so-called "pavillon du protectorat." She also avails herself of the French military authority to preserve order amongst the more unruly members of her household. The French Government, on its part, pays her the outward deference due to a sovereign, and on one occasion a Spanish man-of-war was obliged to fire a salvo of twenty-one guns as she came on board, a mark of honour which the Spaniard had not intended to bestow on her majesty.



NATIVES OF THE SOCIETY ISLANDS FISHING.

Papeete, capital of Tahiti, is a little city of the most violent contrasts. All the races here settled are represented by a total population of 2000, of which about 600 are Europeans. The "Rue de Rivoli," with its "Palais de Justice," "Trésor Colonial," etc. leads by Government House and the Royal Palace, now in course of erection, to the "Place de la Cathédrale." The tower of this church, which has just been finished, only serves to disfigure this romantic spot. The "Rue de la Pologne" shows the bright and dark sides of this little Paris of the

antipodes, while a row of Chinese "stores" and "tea-shops" recalls the Chinese quarter in San Francisco. Papeete is the emporium of trade for the products of the South Sea Islands east of 160° E. longitude. Small schooners of from 20 to 50 tons burden bring the produce of the various groups to Tahiti, whence they are shipped direct for Europe either by Cape Horn or the Cape of Good Hope, according to the season of the year. These schooners, of which about twenty fly the Tahitian flag, take back portions of the cargoes of vessels arriving from Europe for sale or barter amongst the islands. The chief exports are cocoa-nuts, mother-of-pearl, cotton, and some sugar, mainly to England and Germany, very little to France; and oranges, tripang (for China), and edible fungus to California.

9. *The Austral Isles and Low Archipelago.*

Without dwelling on the scattered little volcanic Austral group, which, though well watered, is seldom visited, we may pass at once to the more easterly Low Archipelago, known also as the Paumota, Tuamotu, Pearl, and Dangerous Islands. It forms a cluster of about eighty islets, very thinly peopled, very flat, without flowing streams, and encircled by coral atolls. Their sole importance is derived from their rich pearl-fisheries, and from the trees which yield the highly-valued cocoa-nut oil. These islands are under the protectorate of France, as is also the Gambier group, consisting of five high volcanic islets inhabited by 1500 Roman Catholic converts. Of these the most important is Mangareva, almost under the tropic of Capricorn, whose inhabitants are remarkable for their fine figures, dark complexion, and lank hair.

This is the most easterly of all the *groups* of islands in the Pacific. Beyond these are only a few widely scattered solitary islets, of which, however, two deserve special mention.

10. *Pitcairn and Easter Islands.*

At the extreme south-eastern limits of the Low Archipelago, and far out of sight of any other land, lies the small and mountainous Pitcairn Island, celebrated as having been colonised by the "mutineers of the 'Bounty.'" It is only two miles in extreme length, and three-quarters of a mile wide, with a fertile volcanic soil but rocky and mountainous, rising to a height of 2500 feet, so that much of its surface must be too precipitous for cultivation. It is situated in 25° 3′ S. lat., or just beyond the southern tropic, and has a fine climate, producing all tropical fruits and vegetables. It was in 1790 that nine British sailors, six Tahitian men, and twelve women arrived at this speck in the ocean. By discord and murder they were reduced in ten years to one man—an English sailor named Adams—the Tahitian women and nineteen children. The story of how this ignorant English sailor suddenly rose to the responsibilities of his position, and trained up this little community to habits of industry and morality, and the practice of true religion, is one of the most wonderful and encouraging episodes in the social history of mankind. The little colony was first discovered in 1808 by an American ship the "Topaze," which brought the news to England. They were afterwards visited by two frigates, the "Briton" and the "Tagus," and in 1825 by Captain Beechy in the discovery ship "Blossom," who found a community of sixty-six persons living in a state of uninterrupted peace and harmony, and in a veritable "garden of Eden." Groves of cocoa-nut and bread-fruit trees clothed the rocks down to the water's edge, while in the deep valleys tropical fruits and vegetables flourished luxuriantly. Their village stood on a platform of rock shaded by plantains and fig trees, and surrounding an open square covered with grass. It was

encircled by palisades to keep out the hogs and goats which roamed over the island, and which, with fowls, supplied abundance of animal food. Their houses were clean and comfortable. Their clothing, entirely made from the bark of the paper-mulberry, was neat and graceful. They all lived as one united family, and crime, or even dissension, was unknown.

Injudiciously, as we think, this intensely interesting social experiment was brought to an end by the interference of well-meaning people. The Pitcairn Islanders were removed, first to Tahiti, then back again to Pitcairn Island. Then in 1856 they were all removed to Norfolk Island, far inferior to their own in climate and soil, though somewhat larger. In 1858 some of them returned to Pitcairn, where, in 1869, they were visited by Sir Charles Dilke, and were doing well. In 1873 Commander K. H. A. Mainwaring found seventy-six inhabitants on the island, and he remarks that epidemic or endemic diseases were unknown among them. So recently as September 1878 they have been visited by Rear-Admiral A. F. R. De Horsey, who found them to have increased to ninety, all in good health, and quite happy; and he adds, that Captain Beechey's testimony to their good qualities, given fifty-three years ago, holds good to this day, since they still continue "to live together in perfect harmony and contentment; to be virtuous, religious, cheerful, and hospitable; to be patterns of conjugal and parental affection, and to have very few vices." Admiral De Horsey concludes by saying, that no one acquainted with these islanders could fail to respect them, and that they will lose rather than gain by contact with other communities.[1]

Although the island was quite uninhabited when the mutineers of the "Bounty" arrived there, many remains show that a considerable population must once have lived

[1] Report on Pitcairn Island. *Daily News*, December 4th, 1878.

on it. Burial-places, large flat paving-stones, stone spear-heads and axes, round stone balls, and even stone images, sufficiently prove that this remote speck of land had not only been visited by stray savages, but had been the settled abode of a considerable population, who yet had time to devote to the carving of stone images with tools of the same material.[1]

About 1300 miles farther east is the still more solitary Easter Island, in 27° 8′ S. latitude, and 109° 24′ W. longitude. It is more than 2400 miles from the coast of South America, and, with the exception of a small islet, Sala y Gomez—a mere heap of rocks without vegetation —forms the farthest outpost of the vast series of Pacific islands. It is about 11 miles long and 4 wide, in shape something like a cocked hat, higher at both ends than towards the centre. It is entirely volcanic, with many large extinct craters, one in the western half but towards the centre of the island being over 1000 feet high. There is no running water, but several springs near the shore, and deep pools in some of the craters. There are no trees, the tallest vegetation being bushes of *Hibiscus*, *Edwardsia*, and *Broussonettia*, 10 or 12 feet high. Decayed trunks of trees are, however, found, and the paddles and other wooden articles in possession of the natives show that formerly there must have been wood in some plenty. The natives are fair Polynesians, resembling those of Tahiti and the Marquesas, but they are said to be cannibals occasionally. Both sexes are tattooed, but the women more elaborately. Their weapons are clubs, spears, lances, and double-headed paddles, which seem to be peculiar to them. Their houses are long and low, like a canoe bottom upwards, with a small opening at the side about 20 inches square, serving for door and window.

[1] *The Mutineers of the Bounty, and their Descendants in Pitcairn and Norfolk Islands.* By Lady Belcher. 1870.

This island is celebrated for its wonderful remains of some prehistoric people, consisting of stone houses, sculptured stones, and colossal stone images. At the extreme south-west end of the island are a great number (80 or 100) stone houses built in regular lines, with doors facing the sea. The walls are 5 feet thick and 5½ feet high, built of layers of irregular flat stones, but lined inside with upright flat slabs. The inner dimensions are about 40 feet by 13 feet, and they are covered in by thin slabs overlapping like tiles till the centre opening is about five feet wide, which is then covered in by long thin slabs of stone. The upright slabs inside are painted in red, black, and white, with figures of birds, faces, mythic animals, and geometric figures. Great quantities of a univalve shell were found in many of the houses, and in one of them a statue, eight feet high and weighing four tons, now in the British Museum. Near these houses, the rocks on the brink of the sea-cliffs are carved into strange shapes, resembling tortoises, or into odd faces. There are hundreds of these sculptures often overgrown with bushes and grass.

Much more extraordinary are the platforms and images now to be described. On nearly every headland round the coast of the island are enormous platforms of stone, now more or less in ruins. Towards the sea they present a wall 20 or 30 feet high and from 200 to 300 feet long, built of large stones often 6 feet long, and accurately fitted together without cement. Being built on sloping ground, the back wall is lower, usually about a yard high, leaving a platform at the top 30 feet wide, with square ends. Landwards a wide terrace, more than 100 feet broad, has been levelled, terminated by another step formed of stone. On these platforms are large slabs serving as pedestals to the images which once stood upon them, but which have now been thrown down in all

directions and more or less mutilated. One of the most perfect of the platforms had fifteen images on it. These are trunks terminating at the hips, the arms close to the side, the hands sculptured in very low relief on the haunches. They are flatter than the natural body. The usual size of these statues was 15 or 18 feet high, but some were as much as 37 feet, while others are only four or five. The head is flat, the top being cut off level to allow a crown to be put on. These crowns were made of red vesicular tuff found only at a crater called Terano Hau, about three miles from the stone houses. At this place there still remain thirty of these crowns waiting for removal to the several platforms, some of them being 10½ feet diameter. The images, on the other hand, are made of a grey, compact, trachytic lava found only at the crater of Otouli, quite the east end of the island, and about eight miles from the "Crown" quarry. Near the crater is a large platform, on which a number of gigantic images are still standing, the only ones erect on the island. The face and neck of one of these measures 20 feet to the collar-bone, and is in good preservation. The faces of these images are square, massive, and disdainful in expression, the aspect always upwards. The lips are remarkably thin—the upper lip being short, and the lower lip thrust up. The eye-sockets are deep, and it is believed that eyeballs of obsidian were formerly inserted in them. The nose is broad, the nostrils expanded, the profile somewhat varied in the different images, and the ears with long pendent lobes.

The existing natives know nothing about these images. They possess, however, small figures carved in solid dark wood, with strongly aquiline profile differing from that of the images, the mouth grinning, and a small tuft on the chin. Wooden tablets, covered with strange hieroglyphics, have also been found, but it is evident that these wooden carvings, as well as those of stone, are the relics of a for-

mer age. The people have a tradition that many generations ago a migration took place from Oporo or Rapa-iti, one of the Low Archipelago, and 2300 miles to the westward. Hence they call their present abode Rapa-nui, or Great Rapa, to distinguish it from Rapa-iti, or Little Rapa. An implement of stone, a mere long pebble with a chisel edge, is believed to have been the chief tool used in producing these wonderful statues; but it is almost incredible that with such imperfect appliances works so gigantic could have been executed, literally by hundreds, in an island of such insignificant dimensions, and so completely isolated from the rest of the world. This difficulty is so great, that some writers have suggested an ancient civilisation over the Pacific as the only means of overcoming it. The forces of distant groups of islands might then have been combined for the execution of these remarkable works in a remote island, which may perhaps have been the sanctuary of their religion and the supposed dwelling-place of their gods. At present Easter Island is the great mystery of the Pacific, and the more we know of its strange antiquities, the less we are able to understand them.[1]

11. *The Marquesas Islands.*

North-east of the Low Archipelago, and about 900 miles from Tahiti, are situated the Marquesas, consisting of seventeen islands, of which twelve only have been carefully explored. They are divided into a south-easterly group, including Fatuhiwa, Tanata, Motane, Hiwa-oa, with the Fetuhuka rock, and a north-westerly, comprising Ua-Poa, Nukuhiwa, Ua-Uka, the Motu-iti rock, the islets of Hiau and Fetuhu, and the sandy atoll of Ile de Corail,

[1] "A Visit to Easter Island, or Rapa Nui, in 1868." By J. Linton Palmer, F.R.C.S. *Journal of Royal Geographical Society*, 1870, vol. xl. p. 167.

with a total area of some 500 square miles, and a population estimated at 8000 souls.

The Marquesas, which are all of volcanic origin, resemble the Navigator group in their general appearance and the outline of their coasts. The interior is steep and hilly, in many places rising to an altitude of 3600 feet, but also containing some fruitful and well-watered valleys. All the coasts are free of coral reefs, with the exception of a somewhat extensive chain of rocks lying at no great distance from Ua-Uka. Most of the islands abound in inlets, often forming havens, the approach to which is, however, frequently imperilled by the sudden gusts of wind from the hills.

The soil is, on the whole, less fertile than that of the neighbouring Tahiti, and accordingly bears a less exuberant vegetation. On Nukuhiwa and Tanata the basalt towers to considerable heights, or at least crops out on the summits of the hills, thus often forming abrupt and jagged walls of imposing appearance. The ground is for the most part rocky, and only sparingly covered with humus, though still sufficient to produce a rich tropical vegetation. The climate is hot on the coasts, where the burning sunbeams raise the sea and atmosphere to an almost uniform temperature. But as we ascend to the higher grounds, this tropical heat gives place to a perceptible coolness, so that we might almost fancy ourselves at times transplanted to some upland valley of our mountain districts. In other respects the climate is, on the whole, salubrious, giving rise to little sickness either amongst the natives or strangers.

The aborigines of the Marquesas are usually described as the very finest of all the South Sea islanders, and are said to surpass even the Tahitians in physical beauty. Their complexion is of a pure healthy yellow, with a soft ruddy bloom on the cheeks. According to Cook they

excel, perhaps, all other races in their symmetrical proportions and the regularity of their features. All have a good muscular development, are robust and tall, the men averaging from 5 feet 9 inches to 6 feet in height. The teeth and eyes, however, are not so fine as with the other Polynesians, and the hair is of various shades, though never red. They tattoo themselves profusely, and with taste, though the complexion of the face often assumes a dark colour under the process. The expression of the countenance is pleasant and open, betraying much animation. While of smaller stature than the men, the women also are very well proportioned, and although there is generally a dash of brown in their complexion, many of them are quite as fair and handsome as their sisters of the south of Europe. They are also rarely disfigured by tattooing.

In their habits and religious practices the natives of the Marquesas resemble the Tahitians in many respects. They formerly worshipped a number of gods, for whom a "morai" was set up in every district, on which swine were sacrificed, for, although cannibals, they never offered up human victims. They were at first extremely hospitable, which, however, did not prevent them from indulging in sanguinary feuds among themselves. The efforts of the missionaries to evangelise them were long fruitless; recently, however, the majority of the natives are said to have adopted the Catholic form of Christianity. Nevertheless, according to Von Popp, they still remain perfect savages, nor have they yet altogether renounced cannibalism.

The principal island in the Marquesas group is Nukuhiwa, formerly a French penal settlement. Here is the small but animated port of Taiohai, where resides the French Commissioner of the Marquesas, under whose protection several traders have here founded commercial

houses. The Marquesas Islanders appear to have suffered severely from their contact with European vices, customs, and civilisation, their numbers in 1850 having been estimated at 50,000, while according to a recent geographical work they are now reduced to less than 4000.

The Marquesas and Society Islands being the most easterly groups of any extent in the Pacific, it is interesting to notice the extreme poverty of their animal life. Indigenous terrestrial mammals are quite unknown; neither are there any snakes, and only one lizard. Birds are much less numerous than in the more western islands, no less than twenty-five genera of the Fiji and Samoan groups being wanting, and there is only one new form, a peculiar fruit pigeon, to supply their place. Insects, also, are extremely scarce. This striking diminution of the forms of life indicates that the islands have been peopled by emigration from the west, and do not contain the relics of an ancient continental fauna, as is sometimes supposed; for in that case there would be no reason why the number of genera and species of birds, reptiles, and insects should regularly decrease from west to east as they undoubtedly do.

There remain to be mentioned a few islands, such as Nateya, Tebua, and others. Nateya, Nateaya, or Onateya, otherwise San Pedro, to the east of Tanata, and at about an equal distance to the south of Hiwa-Oa, has a circuit of six miles, is of moderate elevation and very flat, with large woods and lovely plains. Tebua, or Hood's Island, lying about due north-west of Hiwa-Oa, is the smallest of the group, and otherwise far from attractive. The Roberts' Islands, situated in 7° 53′ S. lat. and north-west of Nukuhiwa, are high and uninhabited, though often visited by whalers and trading-ships. The largest is three-quarters of a mile long, and on its north-west side

possesses an inlet affording good anchorage. This part of the island seems very fertile, whereas the rest is apparently dry and barren. Lastly, the little Hergest Rocks, west of Nukuhiwa, are also uninhabited.

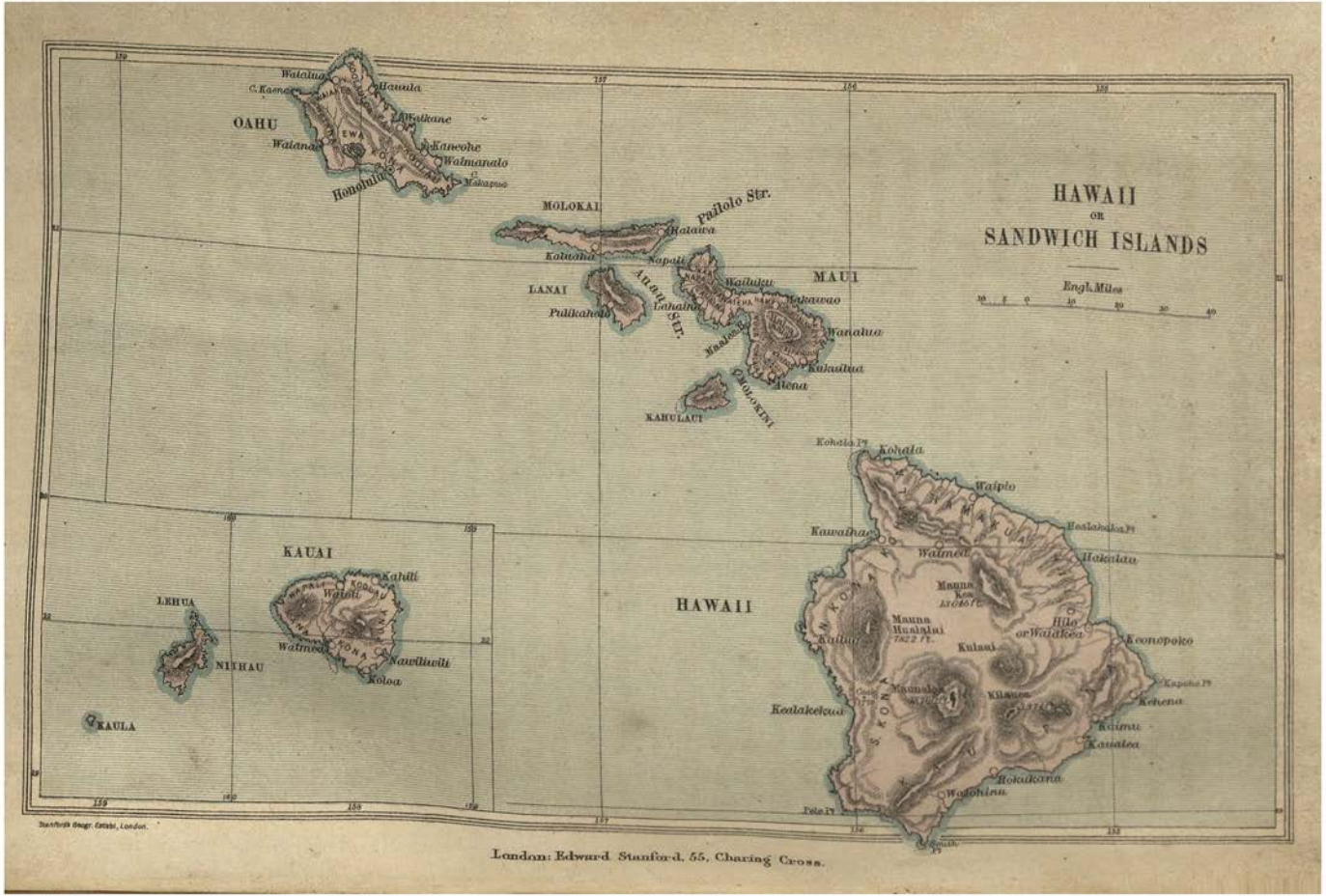
12. *Manihiki, America, and Phœnix Groups.*

Due west of the Marquesas about 700 miles are a few widely scattered islets known as the Manihiki group, mostly low coral islands, and very seldom visited. One of these, called Penrhyn's Island, a small atoll, is interesting as being the extreme eastern outlier of the Melanesian race. The inhabitants are tall, of a dark-brown colour, have wavy hair sometimes frizzled into mops, and prominent nose and brows. They are described as being excessively noisy and quarrelsome. They fish for food or dive for pearl-shell all day; come home by sunset, eat, and begin to talk. They soon quarrel; the women join; they wrangle and storm; the children even join in; and this keeps on all night. It all ends in nothing; they never fight, but bluster and shout, and scream night after night.[1] To any one who knows Papuans or Melanesians, this description determines the race as surely as physical characters, and it is interesting to find these people, who once perhaps occupied the whole Pacific, still existing so near the Society Islands. It also helps to account for the fact that even in Tahiti similar characteristics are occasionally found, for the "king" and "chief of Tahiti," whose portraits are given by Captain Cook, were undoubtedly Melanesians.

About 400 miles north-east of Penrhyn's Island is the small uninhabited Malden's Island, a low coral islet, but remarkable for its signs of former habitation and its singular works in stone. On the central ridge of the

[1] *Journal of the Anthropological Institute*, 1877, vol. vi. p. 231.

BAY OF KARAKORA, HAWAII, WHERE CAPTAIN COOK WAS KILLED. *To face page* 525.



Stanford Geogr. Estabt, London.

London: Edward Stanford, 55, Charing Cross.

island are more than a hundred platforms of cruciform shape, built of coral slabs three feet high, and filled in with a compact mass of coral, shells, and stones. There are also a number of shelter-places or huts formed by three coral blocks, with a fourth on the top. More than thirty wells were also found cut in the coral rock from six to nine feet deep, and a number of shallow graves containing human bones much decayed, and shell ornaments.[1]

Monahiki, or Humphrey's Island, which gives its name to the group, is a coral lagoon island six miles long by five wide, with a population of 400 or 500 natives, whose only food is cocoa-nuts and fish. They are all Christians, and many of them can read and write English. The position of this island is south lat. 10° 20′ 30″, and west long. 160° 1′ 12″.

13. *The Sandwich Islands.*

Proceeding north and a little west from the Society Islands for a distance of 2600 miles, we reach the isolated Hawaii or Sandwich Archipelago, in the neighbourhood of the tropic of Cancer, forming a small and independent kingdom, though largely under the political influence of the United States. It consists of the seven large and inhabited volcanic islands of Oahu, Kauai, Niihau, Maui, Molokai, Lanai, and Hawaii, and the four bare and rocky islets of Kaula, Lehua, Kahoolawe, and Molokini, with a total area of 8000 square miles, and a population of scarcely more than 50,000 souls.

The Sandwich group is also, in its way, an earthly paradise, washed by the soft blue and sunny waters of the Pacific, and exposed to mild and balmy zephyrs. The very people have a holiday look, never appearing

[1] "Polynesian," 21st September 1861. Quoted in Manley Hopkins' *Hawaiian Islands*, p. 71.

oppressed by over-work, but rather light-hearted pleasure-seekers. Mounted on their ponies, they gallop about merrily over the white sands, or else disport themselves heedlessly in the still whiter yeast of the surging billows. No less charming than the sea-shore is the scenery farther inland, where between green hills the purling streams often flow invisibly in their deep rocky channels, where the gigantic trees spread their rich leafy branches in all directions, where the banana, bread-fruit, guava, and cocoa-nut, offer such an overflow of delicious drink and substantial savoury food, that this bright little Eden seems exempt from the common doom: "In the sweat of thy face shalt thou eat bread." Yet, in the very midst of these smiling scenes darkly threaten the dread under-ground forces, which, especially in the partly naked and waterless iron-bound island of Hawaii, have revealed themselves in tremendous fiery craters. Here rise three of the highest mountains in Polynesia—Mauna Kea (13,840 feet), Mauna Loa (13,650 feet), and Mauna Hulalai (11,020 feet), all three active volcanoes. East of Mauna Loa is Kilauea, the most remarkable burning mountain in the world, and scarcely elsewhere surpassed in the awe-inspiring grandeur of its cauldron of seething lava, when contemplated on a moonless night. Its crater, of comparatively easy access, forms a fathomless oval abyss, in which there is usually visible a glowing lake of lava rising and falling independently of the other volcanoes. After a silence of eleven years Mauna Loa was the scene of a terrific eruption on the night of February 14, 1877. Fiery clouds of smoke and vapour were at first vomited with astounding velocity from the level of 5000 feet to a height of more than 15,000 feet, covering the heavens for a space of 100 square miles, and emitting such a strong glare, that the whole island was lit up as vividly as by the mid-day sun, and the light was clearly visible

on the distant Maui. Ten days afterwards there occurred a fresh and most remarkable eruption, from a submarine volcano in the Bay of Kealakeakua. Countless red, blue, and green flames flickered over the surface of the waters, and huge glowing masses of lava emitting large volumes

KILAUEA VOLCANO.

of steam, and diffusing dense sulphureous exhalations, were hurled into the air. This was accompanied by a loud rumbling noise, while the waters immediately over the crater were violently agitated and tossed about, as if rushing over high cliffs, or raised to the boiling point by the subterraneous fires. Some vessels sailing over the spot were struck by the falling lava masses, without, however, suffering much damage. This eruption was preceded by a violent earthquake.

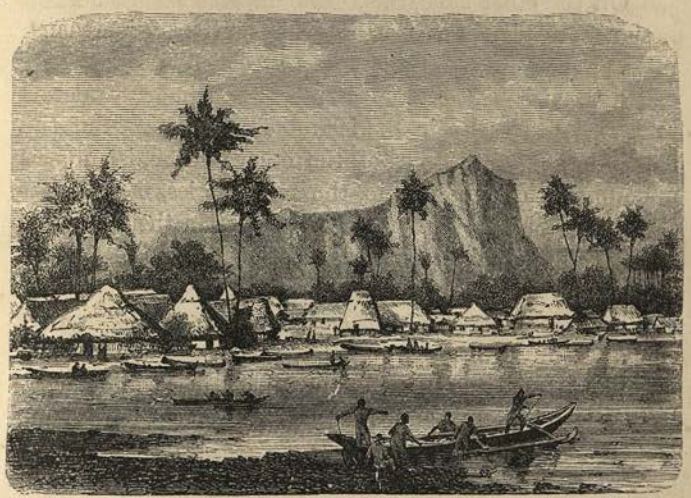
Removed by such a wide expanse of ocean from all the other island groups of the Pacific, and rising abruptly from the enormous depth of 18,000 feet, the Sandwich

Islands may be expected to possess a peculiar natural history. Their vegetation, though generally similar to that of the other Pacific islands, has many peculiarities, especially in possessing in their lofty mountains a number of forms allied to those of Europe and North America, and quite removed from anything in other parts of the tropical Pacific. The most remarkable of these alpine plants are species of the genera *Silene*, *Vicia*, *Aster*, *Fragaria*, and *Vaccinium*, since they imply some communication, probably by intervening islands, with North America.

It is, however, in its animal life that these islands present the greatest individuality, shown chiefly in the two groups of birds and land-shells. Its birds are very few, only nineteen species of truly indigenous land-birds being known. These belong to eleven genera, eight of which are peculiar, and what is more remarkable, four of them form a small family, Drepanididæ, which has no representatives in any other country. Insects, as in most of the remoter Pacific islands, seem to be excessively scarce, but land-shells are wonderfully abundant, and the greater part of them constitute a peculiar family found nowhere else. Of this family there are nearly 300 species; and the curious thing is that each species is, on the average, restricted to an area of a few square miles. Not only each island, but each valley, each hill, and sometimes each ridge or each mountain slope, possesses peculiar kinds found nowhere else. More than half the species are found in the island of Oahu, where there is most forest and the soil is most fertile, and also perhaps because that island has been better explored.

Independent since 1840, the Hawaiian group forms since 1844 a constitutional monarchy recognised by America and the European powers, and since 1864 it has enjoyed a fairly liberal parliamentary administration,

with one chamber and a responsible ministry. This little state has good highways, houses built in the European style, and about 300 schools. On all important occasions the king is required to summon a privy council, consisting of the ministers, the governors of the larger islands, the chancellor of the kingdom, and sixteen other members chosen in equal numbers from the native and naturalised elements. The king resides in the capital, Honolulu, on



VILLAGE IN HAWAII.

Oahu, which has a population of 14,000, and is in regular communication with San Francisco. In Hawaii the most important town is Hilo, with 6000 inhabitants. The standing army consists of threescore and fifteen men.

The Kanakas, as the natives are called, are amongst the finest and most intelligent races of the Pacific, and have become thoroughly "Europeanised," or, perhaps rather, "Americanised." The ladies model themselves quite after the American fashion, speak English in preference

to their mother tongue, and are under the influence of the Protestant or Roman Catholic missionaries.

The public debt, which Hawaii possesses in common with other great states, amounts to no more than £60,000, while the imposts are very light. The income-tax is only one half per cent, while the duty on no article exceeds a maximum of ten per cent. All, however, who wish for the privilege of voting have to pay a capitation fee of £1.

On the other hand, the Hawaians, like all other Polynesians, are visibly decreasing in a constantly increasing ratio. They are also subject to a species of leprosy, here called "mai-pakè," all the victims of which are banished to a secluded valley in the island of Molokai. But the depopulation of these, as of the other Pacific islands, is undoubtedly due in part to the missionaries, more especially those of the Reformed Church. In their zeal to rescue the uncivilised natives, they have not always gone to work with the necessary discretion. Giving undue weight to our western methods of instruction, they fancied that by reading and writing alone people might be reclaimed from the savage state and civilised into intellectually developed and rational beings. One of the leading principles for the guidance of every missionary, and, in fact, of every teacher, must ever be that which requires us to take account of the strength and capacity of the pupil and disciple. Nothing is easier than to infuse knowledge, yet nothing more difficult than to emancipate the mind from the shackles of ignorance, and thus lead it to new and higher impulses. And even when the individual does not at once give way beneath the oppressive burden of undigested knowledge, the disastrous consequences never fail to affect the race itself.[1]

Another writer, the Hawaiian consul-general Mr. Manley Hopkins, gives more definite statements to the

[1] Isabel Bird, *Six Months in the Sandwich Islands.* London, 1875.

same effect. He says—"The oppressive system of government, the discontinuance of ancient sports, and consequent change in the habits of the people, have been powerful agents in this work of depopulation; and the ill-judged enforcement of cruel punishments and heavy penalties for breaches of chastity have much aided it, by giving an additional stimulus to the practice—always too common among Polynesian females—of causing abortion, of which practice sterility is the natural result." And again: "The missionaries have not attained the measure of success which might have been expected from the long and strenuous efforts they have made. They have not truly Christianised or regenerated the nation. They have presented Christianity as a severe, legal, Jewish religion, deprived of its dignity, beauty, tenderness, and amiability. They have not made the people love religion. In their rigorous Sabbatarian view of the Lord's day, in their desire to enforce a Maine liquor law, and in some other matters, they have attempted to infringe on the natural rights of men, and have, in native eyes, reproduced the detested *tabu* system—the nightmare from which the nation escaped in 1820."

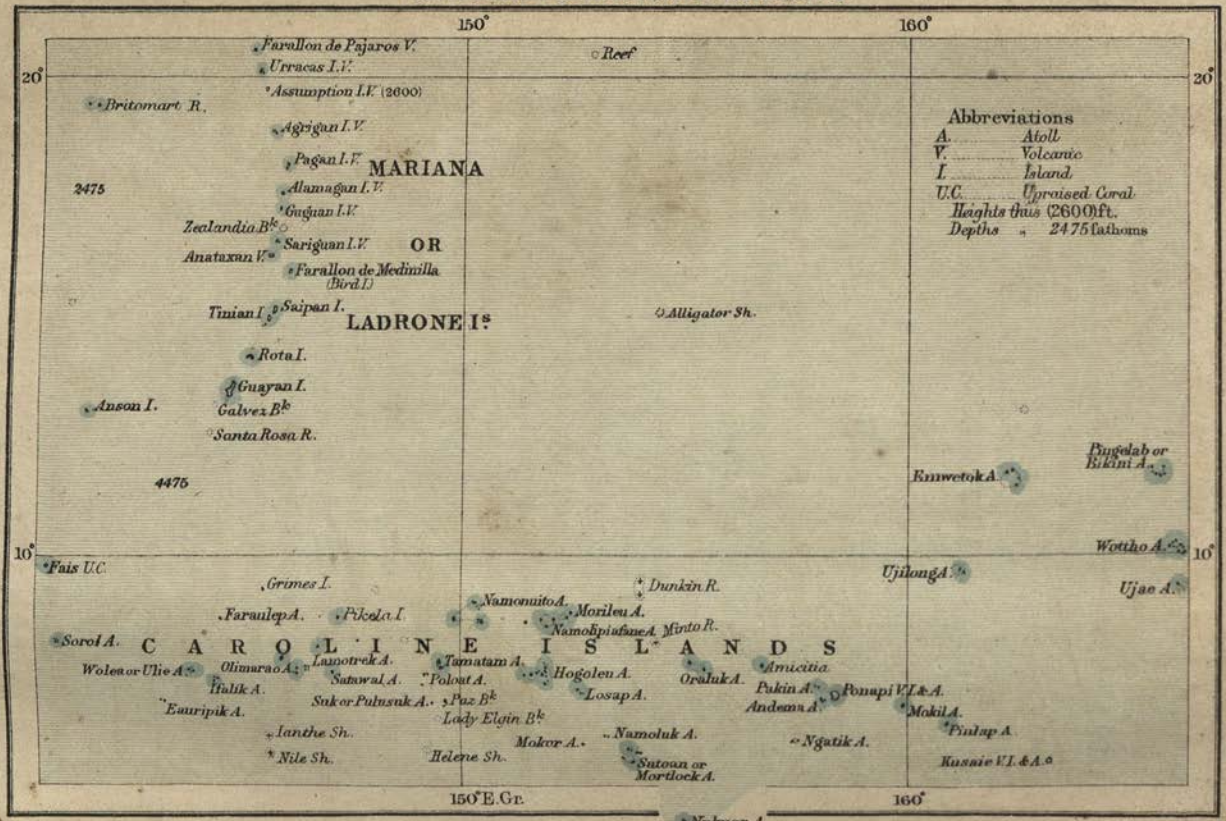
The missionaries to whom these remarks apply are those of the Congregational Denomination of the United States, who, for nearly forty years, from 1820 to 1860, had almost undisputed possession of the field, and long exercised great influence over the government. That influence has now ceased, and a Church of England mission has been established; but it may be impossible to neutralise the evil effects of a system of repression and habits of hypocrisy which have been at work for nearly two generations.

According to the most recent consular reports the production of sugar is increasing, "and a stream of wealth is flowing in on the planters. All that is wanted is labour

and population, which it is hoped may be procured from British India with the permission of the Indian Government." [1] In the interest of the natives it is to be hoped that the importation of foreign labour will be forbidden. It may create "wealthy planters," but it will assuredly tend to hasten the destruction of the Hawaiians, a people in every way superior to the coolies by whom it is proposed to supplant them.

[1] *Consular Reports*, 1878. Part I. p. 203.

CAROLINE & LADRONE ISLANDS.



Stanford's Geogl. Estabt.

London: Edward Stanford, 55, Charing Cross.

CHAPTER XXV.

MIKRONESIA.

1. *Extent, and Component Groups.*

NORTH of the equator, between New Guinea and the south coast of Japan, the great ocean is studded with countless little islands, which, running partly parallel with those of Melanesia, form a second and outer zone round the Australian mainland. In consequence of their remarkably small size, they are collectively called Mikronesia, and are conveniently grouped in three archipelagoes. Of these the more easterly is again subdivided into the two clusters of the Gilbert and Marshall Islands. Farther west follows the large group of the Carolines, including the Pelew Isles still farther to the west, called also the Western Carolines. North of them are the Ladrones or Mariannes, beyond which, in the same direction, are a number of small groups, the most important of which are the Bonin Isles, on many maps named the Magalhães or Anson Archipelago, almost all of which are uninhabited. Most of these groups are inhabited by the fair race scattered over Polynesia, and presenting the most striking contrast to the Papûas of Melanesia.

2. *The Marshall Archipelago.*

The Gilbert and Marshall or Mulgrave groups stretch east of the Carolines in the direction from N.N.W. to S.S.E. between the parallels of 12° N. and 3° S. latitude.

The northern or Marshall Archipelago is divided into the Radack and Ralick chains, east and west; and of the whole number of forty-six the eight smallest are flat coral islands encircled by reefs, all the rest being lagoon-islands.

The vegetation of the Marshall group, though luxuriant, is still inferior in exuberance and variety to that of the Carolines, and continually diminishes and becomes more stunted as we proceed northwards. The most useful plant is the pandang (*Pandanus*), of which there occur more than twenty varieties, and which supplies the staple food in many of the islands. The fruit is baked in pits, and is also made into a sort of preserve called *mogan*. Next in importance to the pandang is the cocoa-nut, yielding not only food, drink, oil, and utensils, but also bast for cordage and canvas. But for the fibre of this plant the natives could never have turned their thoughts to navigation. The bread-fruit tree is less wide spread, being restricted to the moist lowlands of the inhabited islands. From the root of the *Tacca pinatifida* a sort of flour is prepared; in many islands there grow several species of taro and the plantain, besides which yams are cultivated, and some varieties of the hibiscus yield a strong description of bast.

There were originally no land mammalia, but the goats, pigs, and cats that have been introduced have greatly multiplied, and now run wild. Of birds, besides poultry, there occur only a few species of land and water fowl. Amongst the amphibious animals mention may be made of the sea-turtles, and amongst the fish two varieties of venomous roach growing to an enormous size. Flying-fish and sharks abound, and there is a great variety of univalve and bivalve molluscs, amongst which are the triton's horn, used as a trumpet, and mother of pearl which is sharpened for knives. Tripang also is plentiful.

The population of the Marshall group, comprising

about thirty distinct atolls, does not exceed 10,000, most of the islands being very sparsely peopled. The inhabitants all speak dialects of one language, different from that of the Caroline Archipelago, though of similar grammatical structure. The people resemble those on the Caroline Islands, but have been as yet less demoralised by contact with foreign vice and disease.

3. *The Gilbert or Kingsmill Islands.*

The Gilbert Archipelago consists of sixteen islands, all coral reefs or atolls, and nowhere rising more than twenty feet above the sea. The soil is only a few inches in depth, composed of coral sand and vegetable mould, in which hardly anything but cocoa-nuts and pandanus will grow spontaneously. A little taro (*Arum cordifolium*) is grown in trenches with great care. The food of the people is mainly procured from the sea, and ranges from the whale to the sea-slug. Great numbers of fish are taken in the lagoons, and turtle are abundant in the season. In such a barren group of islands the means of procuring the necessaries of life seem scanty enough, and it must require a constant expenditure of labour and skill to maintain life, yet nowhere in the most favoured portions of the Pacific is the population more dense or more healthy than in these sterile islets. Elsewhere in Mikronesia the sparseness of the population is painful, but here the overflowing swarms are a continual source of surprise. Some of the islands seem to form one great village. The very smallest of these atolls, only two miles across, has a population of from 1500 to 2000, while Taputeouea has from 7000 to 8000. The population of the whole group is estimated at more than 50,000, while the area of dry land is not more than 150 square miles, giving more than 330 persons per square mile, while in some of the islands it reaches

400 per square mile—a density of population certainly unequalled in the world in any area where the people depend for food solely on their own exertions.

The natives here are said to be darker and coarser than in the more western islands, so that there has probably been some intermixture of races, which, combined with the need for constant exertion in fishing, has created the energetic temperament which has rendered so large a population possible. They are tall and stout, 5 feet 8 inches or 5 feet 9 inches being the average height. They almost all go naked, except a conical hat of pandanus leaf. They make a kind of armour of plaited cocoa-nut fibres to protect themselves in war from their formidable swords armed with sharks' teeth. Their canoes are made entirely of cocoa-nut wood boards, sewn neatly together and fastened to well-modelled frames. The American Mission has stations in three of the northernmost islands of the group, and many of the children have been taught to read. The natives of the large island of Taputeouea are said to differ from all the rest in their slender well-proportioned bodies, fine black glossy hair, and projecting cheek-bones, and they are thought to have more affinity for the true Malays than for Polynesians. On the whole, this group offers one of the most remarkable social phenomena on the globe—a people in a state of almost complete barbarism, living under the most adverse physical conditions, and yet presenting a density of population not surpassed, if equalled, among the most civilised peoples in the most fertile countries of the world.

4. *The Caroline Archipelago.*

The Carolines, lying between New Guinea to the south and the Ladrones to the north, stretch across thirty degrees of longitude, or for a distance of more than 2000

miles west and east. By two wide channels they are divided into three sections, of which the western or Pelew Isles includes the largest of all the groups of lagoons in

CREEK IN THE CAROLINE ISLANDS.

the archipelago. To the north-east of these follows the little Lamoliork group (Gulu or Matelotas), beyond which is the large rocky island of Yap.

The majority of the islands are comprised in the central section, and, with a solitary exception, they are all lagoon formations. The most remarkable is Rouk or Hogolu, consisting of a lagoon reef 115 miles in circuit, within which are a number of little hilly islets. Most of the Carolines, however, are low, the more elevated being of volcanic formation and full of steep, craggy hills. The climate is healthy, and tempered by cool breezes.

Besides the cocoa-nut, pandang, and plantain, abounding everywhere, on the higher islands are found the areca palm, the bamboo, clove-tree, orange, sugar-cane, betel-pepper, sweet potatoes, and several species of arum or taro (*Arum esculentum*). On the other hand, the principal plant on the low islands is the bread-tree (*Artocarpus incisa*), which is here as much the exclusive article of diet as the taro is elsewhere.

The natives of the Carolines, numbering from 28,000 to 30,000, belong to the brown Polynesian stock, are of large size and strongly built, with a nut-brown complexion in the eastern section, and a dark copper colour in the Pelews, the people of which, however, belong to a distinct race. All allow their curling tresses to grow long, confining them in one knot close to the back of the head. Owing to their practice of betel-chewing, the western islanders have as a rule perfectly black teeth, whereas those of the natives in the eastern section are mostly very fine and white. Their dress is of the scantiest, but tattooing is universal; and fragrant flowers are usually worn in the pierced cartilage of the nostrils, bits of tortoise-shell or some similar ornament, and even cigars, knives, etc., in the ears.

5. *Ponapé and its Ruins.*

The American Mission have stations on Kersai and

Ponapé or Ascension Island. Both are high basaltic islands surrounded by coral reefs. Kersai or Ualau is about 8 miles long and 7 wide, very rugged, and rising to a height of 2000 feet. It is covered with forest, the lower part consisting mainly of fruit-trees. The climate is excessively moist, and the vegetation very luxuriant. Ponapé is larger, being 14 miles long by 12 wide, and its highest mountain is 2858 feet high. It is also thickly wooded, and has a population of about 5000 inhabitants. A coral reef extends round the island at about three miles from the shore, with seven openings forming a number of excellent harbours. The climate is excessively equable, the total range of the thermometer during three years being only 19°, the mean temperature being 80¼°. The trade winds blow for the greater part of the year; violent storms, as well as electrical disturbances, are rare, and rain falls more or less all the year round. The celebrated Malayan fruit, the durian, has been introduced here, and the trees produce fruit abundantly.

There are some interesting ruins at Metalanien harbour, which are a great puzzle to ethnologists. On the bank of a creek is seen a massive wall built of basaltic prisms, about 300 feet long and 35 feet high. A gateway opening on to the creek has a sill about 4 feet high made of enormous basaltic columns laid flat, on passing which the traveller finds himself in a large court enclosed by walls 30 feet high. Round the whole of this court, built up against the inside of the outer walls, is a terrace 8 feet high and 12 feet in width, also built of basaltic prisms. The whole of this court is not visible at once owing to the dense vegetation; but by clambering about among trunks and creepers it is found to be nearly square, and to be divided into three parts by low walls running north and south. In the centre of each of these courts stands a closed chamber 14 feet square, also built of basaltic

columns, and roofed over with the same not very closely laid. The walls at the base, including the terrace, are 20 feet thick, and above it 8 feet; and some of the stones, especially those in the front wall near the gateway, are 25 feet long and 8 feet in circumference.[1]

There are no basaltic columns anywhere near these ruins, but there are very fine ones on the central ridge of the north side of the islands, at least ten miles distant over an utterly impracticable country. They must therefore have been conveyed down to the coast, and then by water to this place. The idea that these buildings could have been formed, either by the present race of savages or by Spanish buccaniers, as some have thought, is preposterous; and they remain another mystery of the great Pacific, hardly inferior to that of Easter Island with its colossal images. There are other ruins in the island of a similar character, as well as mounds a quarter of a mile long and twelve feet high. Ruins also exist at Kusai Island, but those of Ponapé are by far the most remarkable.

6. *The Pelew Islands.*

These are the most westerly group of Mikronesia, and only 600 miles east of the Philippines. They consist of ten islands, several of which are high and mountainous, others being low coral islands. Babelthuap, the largest, is 30 miles long, with a mountain at the northern end. They are well covered with timber trees, from some of which the natives make good canoes capable of holding thirty persons. Yams and cocoa-nuts are the chief articles of food, but there are also bananas, and other fruits and vegetables. The inhabitants are quite a distinct race from the Caroline Islanders and Polynesians who prevail farther east, having a darker complexion and being of

[1] C. F. Wood's *Yachting Cruise in the South Seas*, 1875, pp. 163-167.

smaller stature. They appear to have both Malayan and Papuan characteristics, and are probably the result of a superior Malay tribe mixed with a lower race of aborigines, possibly of Papuan or Negrito affinities. Early voyagers were loud in praise of these people. Captain Wilson, of the "Antelope" packet, who was wrecked there in 1783, is said to have found the natives "delicate in their sentiments, friendly in their disposition, and, in short, a people that do honour to the human race;" and Captain Cheyne says that they are far more intelligent and polished in their manners than the Caroline Islanders. Captain Wilson brought home with him Prince Lee Boo, son of the king, Abba Thulle, a young man who evinced so much aptitude for civilisation and such an excellent disposition, that his death from small-pox excited a lively sensation throughout England. Later travellers have given a less favourable account of the Pelew Islanders; but, as in so many other cases, they have probably since had good reason to dislike their European visitors, and have had many injuries to revenge.

The German professor, Dr. Carl Semper, has recently spent ten months in exploring the Pelews, and has given us a full account of the peculiar local institutions of the country. The term *mugul* = bad, is still, as it was ninety years ago, the expression for anything objectionable according to the conventional moral code of the islanders. For, however loose are their habits in all the sexual relations, etiquette is firmly rooted in their thoroughly aristocratic political organisation. Thus, no well-conducted man will look on while women are bathing; and Semper relates that his native guides always uttered a warning cry whenever they approached any place where the ladies were enjoying their bath. Hence these places have become the safest and most favourite resorts for clandestine meetings. The costume of the women consists simply of two

leaves reaching from the hips to the knee, open at the sides and made fast by a girdle. Politeness also requires the men never to be seen abroad with their legitimate wives. These usages, however, obtain only among themselves; to strangers they are extremely indulgent. A headman's wife fell into a violent passion when Dr. Semper playfully set his hat on her head after she had betrayed some interest in its style, for it was "mugul," as she remarked, for a native lady to cover her head. On another occasion a chief was equally indignant when Semper directly asked him his name. He was also witness of a warm scene between the "king" and a Spanish half-caste named Gonzalez, who had addressed his majesty in the speech of the common people; for here, as in Java and other Malay communities, inferiors must address the upper classes in the polite language; while the man of rank, on the contrary, makes use of the vulgar tongue. The Pelew Islanders have even invented an order of knighthood, which the king has the exclusive right to award as well as to take back from those who may have fallen into disgrace. It is called "Klilt," and its insignia is the first cervical vertebra of the dugong or sea-calf (*halicore*). The investiture and resumption of the order are alike a very formidable proceeding, the hand being violently thrust through the narrow ring of the fish bone, whereby a finger is occasionally lost, and the skin in any case torn off. Yet the honour is purchased from the State for so much tripang by seafarers.

Of the "cloebbergoells," or clubs and confraternities, or rather brotherhoods and sisterhoods established between those of like age amongst both sexes, Semper was the first to give a comprehensive account. The public duties of the male cloebbergoells are: 1, To serve in war by land and water; 2, Statute labour on the occasion of all public feasts without distinction; 3, The erection of the

houses in which the cloebbergoells reside; 4, To sew the canvas for their heralds; 5, To catch certain fish, especially the enormous roach. The women form similar associations, which, like the others, have their leaders and enjoy the privileges of recognised corporations, though without the obligation of taking part in the public works or in war, or of compelling their members to occupy certain houses in common.[1]

7. *The Mariannes, or Ladrone Islands.*

The third Mikronesian archipelago, the Mariannes or Ladrones (Robber Islands) is also divided into two sections by a wide channel, and forms a chain of fifteen islands lying between 13° and 21° N. latitude, with a total area of 400 square miles, and a population of from 5000 to 6000. They form a Spanish possession, the Governor, who is dependent on the Captain-General in Manilla, residing in Agaña, or Guayan, or Guam. Agaña, which has 2000 inhabitants, is the chief or rather the only town of the colony, and serves also as a penal settlement. The flat coasts of the southern island are encircled by coral reefs, within which are good havens, while the land is extremely rich, productive, and well watered by numerous rivulets. The northern islands are, on the contrary, comparatively barren, with a scanty vegetation, but full of picturesque and craggy hills, which are exclusively igneous, but apparently rise nowhere to more than 1000 metres above the sea-level. Besides the extinct craters, there are some still active volcanoes, and the coasts are here steep and elevated without reefs or risks, but also harbourless.

These islands once had a large population, but owing to disputes and revolts against their Spanish masters, a war of extermination soon began, and when Anson visited

[1] Carl Semper, *The Pelew Islands, etc.*: Leipzig, 1873.

Tinian in 1742, he found it entirely deserted. It had once possessed a population of 30,000, but was then only inhabited by wild hogs and cattle. According to Kotzebue, there was only one couple of the primitive race alive in 1817, at the death of whom they would be entirely extinct. The islands are now inhabited by immigrants from the Carolines and from the Philippines. The primitive inhabitants have, however, left behind them some memorials of their talent. In Tinian these structures are very remarkable. They consisted of two ranges of stone columns, 5 feet 4 inches wide at the base, and 14 feet high, having large semi-globes, 5 feet 10 inches in diameter, placed on the tops, with their flat surfaces upwards. A view of one of these is given in Lord Anson's voyage. They are supposed by Freycinet to be the supports of a wooden ceiling to which the roofs of the principal houses were fixed; but other writers consider them to be sepulchral monuments. There are numerous similar remains on the other islands, but smaller than those in Tinian.

According to the soundings of the "Challenger" expedition, one of the deepest parts of the Pacific Ocean occurs towards the south-west of the Ladrones. Here the "Challenger" took its deepest sounding (4575 fathoms) in 11° 24′ N. lat. and 143° 16′ E long. West of the Ladrones and Bonin group there occurs a deep trough, with a mean depth of 2400 fathoms, and stretching from the Ladrones to the Carolines, which lie in nearly the same depth. Deep water, varying from 2300 to 2500 fathoms, continues from this point all the way to the neighbourhood of Japan.

NEW ZEALAND. North Island.

London: Edward Stanford, 55 Charing Cross.

NEW ZEALAND.

CHAPTER XXVI.

PHYSICAL HISTORY OF THE NEW ZEALAND GROUP.

1. *Position, Extent, Islands, etc.*

In the centre of the South Pacific, and far removed from the shores of Australia, rises the island group bearing the name of New Zealand. Lying between 34° 50′ and 47° 50′ S. latitude, and consequently crossing thirteen parallels, it consists of two large and several smaller islands, with a total area estimated at 101,000 square miles,—that is, as nearly as possible, the size of Italy and Sicily together. It is also about as broad as Italy (110 to 180 miles), which country it moreover resembles in its figure, though in a reversed sense. The two great masses known as North Island, or Te Ika, or Maui, and South Island, or Te Wahi Panamu, are separated by Cook Strait, which, at its narrowest point, is scarcely sixteen miles wide. South Island is, again, separated by Foveaux Strait from the smaller and uninhabited Stewart Island, and these three form what is usually known as New Zealand.

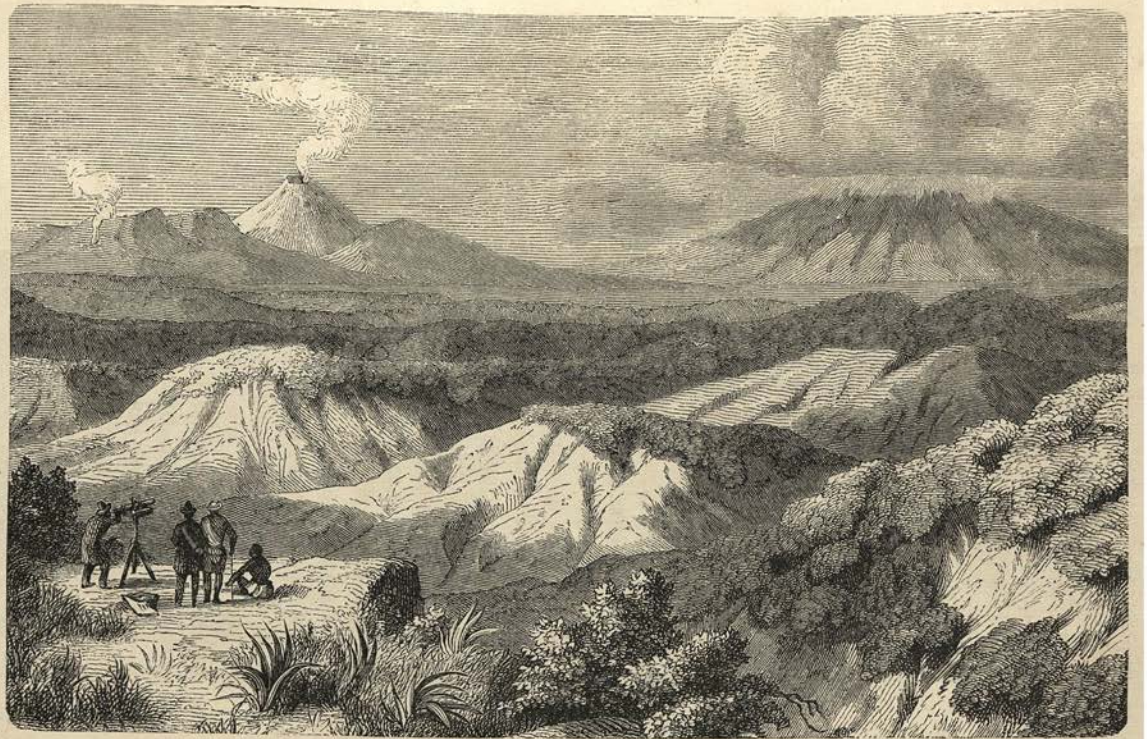
But besides these and the few islands near the coasts, there are several outlying groups and islands, which, though situated at a considerable distance in the ocean, yet, both by their natural productions and geographical position, may most conveniently be classed as forming part of the New Zealand group of islands. To the south

are the Auckland, Campbell, and Macquarie Islands; to the east, Chatham Island and the small Bounty and Antipodes Islands; to the north, the Kermadec group, and Norfolk with Phillip Islands; and to the north-west, Lord Howe's Island.

2. *Physical Features and Scenery.*

The two large islands of New Zealand are marked by striking physical differences, which cannot fail to react upon their economical and social relations. North Island, with its varied outlines, consists of two sections—the already mentioned north-western peninsula, abounding in fertile and well-watered valleys, and the main body of the island, characterised by gently sloping hilly ranges and low-lying table-lands, varied here and there by volcanic peaks. The country is everywhere covered with a luxuriant growth of timber, except in the heart of the island, which is full of lakes, hot springs, and geysers, depositing silica and sulphur, like those of the Yellowstone Park in the United States. South of this point, and not far from the centre of North Island, is situated Lake Taupo, whose secluded and romantic waters are furrowed only by the canoes of the natives, here more numerous than elsewhere. Still farther to the south is a very wild highland region, but little visited by Europeans. Here are Mount Ruapehu and the extinct volcano of Tongariro, rising to a height of 9195 and 7000 feet respectively. In this district lie the sources of the river Waikato, which flows northwards through Lake Taupo, watering one of the finest regions in the country. Here also are the sources of many other streams, flowing some eastwards to Hawke Bay, others in a south-westerly course to Cook Strait.

Besides Mount Tongariro, New Zealand possesses a



TANGARIRO AND RUAPEHU.

To face page 546.

second active volcano in Mount Wakari, in White Island, a small rock in the Bay of Plenty; besides a large number of extinct craters, tufa and lava cones, beds of slag and scoria, of which as many as sixty-three are found in the isthmus of Auckland alone. At the western entrance of Cook Strait rises in solitary grandeur the snowy Taranaki, or Mount Egmont, 8270 feet high,

South Island, which is the longer and more extensive of the two, presents a very different physical aspect. Its western side is traversed in its entire length by the so-called Southern Alps, a massive range from 10,000 to 13,000 feet high, whose slopes up to the snow line are densely wooded. Towards the west they contain vast snow-fields and glaciers, extensive tracts filled with stony detritus, moraines, clefts and fissures of enormous depth, whence flow icy streams to the lakes of the table-land. Parallel with the upland plateau, and about the centre of the island, runs a low range, intersected by many mountain streams, which make their way over a series of terraces down to the south-east coast. The lower terraces, from the elevation of about 1500 feet, down to and inclusive of the narrow coast strip, form the so-called Canterbury Plains.

This province of Canterbury is separated from Otago, its southern neighbour, by the broad-flowing Waitaki, which is fed by three lakes lying at the foot of the central group of hills. The outlines of the coast are very remarkable. The south-western corner of the island is indented, doubtless through glacier action, by deep fiords, similar to those of Norway; the north-eastern seaboard, on Cook Strait, is diversified by countless little inlets and bights; while the east coast forms, with two exceptions, a low and perfectly straight shingly beach. The exceptions are Port Littleton and Port Chalmers, the two narrow channels at Dunedin and Christchurch, whose

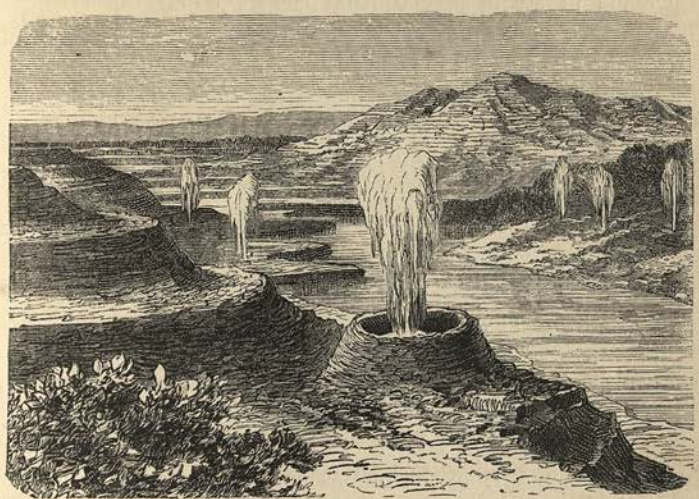
peculiar formation is due to masses of volcanic rock disposed in crescent form, and encircling small water basins.

3. *Lakes, Hot Springs, and Glaciers.*

The lakes of New Zealand deserve especial notice, as they present many interesting features. They may be generally classed as due either to volcanic or to glacial action, the former being the case in the North, the latter in the South Island. Taupo, the largest lake in the North Island, is a veritable inland sea, 25 miles long and 20 wide, and of an enormous depth, which has not yet been ascertained. It is situated 1250 feet above the level of the sea, and is surrounded by volcanic deposits forming a table-land 1000 feet above its surface. From this rise numerous volcanic cones, while the active volcano Tongariro is only a few miles to the south. On the western side the lake is bounded by vertical precipices 1000 feet high, and here the water is believed to be deepest. Its colour is a dark blue, like that of the deep ocean, and from its centre rises a single small but very beautiful island. This lake has evidently been formed by a great subsidence of the volcanic plateau. Nine miles south of Taupo, behind a group of volcanic cones, is the small lake Roto-aira, at an elevation of more than 1700 feet.

The Waikato, about twenty-five miles from its exit from the lake, passes through a remarkable group of hot springs, extending for more than a mile along its banks. The river here plunges through a deep valley, and its floods, whirling and foaming around rocky islets, dash with a loud uproar through the defile. Along its banks white clouds of steam ascend from hot cascades falling into the river, and from basins full of boiling water shut in by white masses of stone. Steaming fountains rise at short

intervals, sometimes two or more playing simultaneously, and producing endless changes, as though experiments were being made with a grand system of waterworks. Dr. Hochstetter counted seventy-six separate clouds of steam visible from a single station, and among them were numerous intermittent geyser-like fountains, with periodical water eruptions. The accompanying illustration affords but a faint idea of the grandeur and peculiarity of the natural scenery of Orakeikorako.



GEYSERS ON THE RIVER WAIKATO.

About 40 miles N.N.E. from Lake Taupo, and nearly the same distance from the shores of the Bay of Plenty, is the lake district—a cluster of more than sixteen lakes of various sizes, occupying a tract of country about 20 miles long by 12 wide, and covering about the same area as the large lake itself. The district around all these lakes, and extending between the volcano of Tongariro and the sea, is a zone of hot springs, solfataras,

fumeroles, and mud volcanoes, more than a thousand in number, which, according to Dr. Hochstetter, far exceeds all others in the world in variety and extent. The largest as well as the most irregular and picturesque of the group of lakes is Tarawera, surrounded by rugged rocky bluffs, shaded by fine woods, and bounded on the east by the rock-crowned Tarawera mountain. Next in size is the Rotorua lake, six miles across and nearly circular, with a conical island almost exactly in its centre. Clouds of steam ascend from the numerous hot springs about the shores of this lake, and with its circular form and the conical peak in its centre give it all the appearance of a large volcanic crater; but its depth is but small, and Dr. Hochstetter is of opinion that, like all the other lakes in this district, its origin is due to the sinking of part of the volcanic table-land in which they are situated.

But the most wonderful part of the lake region is the small Rotomahana, or Warm lake, with its boiling springs and siliceous terraces. The first appearance of the lake itself is disappointing, as it wants all the elements of beautiful scenery possessed by the other lakes; but the clouds of steam ascending everywhere around it show that there is something else to be seen. Almost everywhere around the lake there is a seething, hissing, and boiling sound from the numerous escapes of steam, boiling water, or hot mud, while in the lake itself hot springs are so numerous that the whole body of water is kept at a temperature of 90° or upwards. The chief sight, however, is the Te Tarata, at the north-east end of the lake. At 80 feet above its surface, on the fern-clad slope of a hill, there lies an immense boiling cauldron in a crater-like excavation with steep sides, 30 or 40 feet high, and only open on the side towards the lake. The basin itself is about 80 feet long by 60 wide, full to the brim of perfectly transparent water, which in the snow-

white incrustated basin appears of a beautiful turquoise-blue. Even at the margin it has a temperature of 180° Fahr., but towards the centre, where it is in a state of constant ebullition to the height of several feet, it is probably at the boiling point. The surplus water flowing down the hill-side into the lake has formed a pure white siliceous deposit in a series of ridges or steps covering a surface of about three acres. At the bottom the terraces are low, but farther up they are two, three, or even four and six feet high, each with a raised rim from which slender stalactites hang down, and enclosing on its platform one or more basins resplendent with the most beautiful blue water. These basins are of every size and depth, the upper ones warmer and the lower cooler; and they form a series of exquisite baths such as the most refined luxury could not surpass. The pure white of the siliceous deposit, in contrast with the blue of the water and the green of the surrounding vegetation; the intense red of the bare earth-walls of the water-crater; the whirling clouds of steam—altogether present a scene unequalled of its kind in any other part of the globe. Passing by numerous mud-springs, fiercely boiling fountains, acid lakes, and spouting geysers, we come, on the south-west side of the lake, to another terrace-fountain called Otukapuarangi, not quite so large and grand as Tetarata, but surpassing it in the finish and regularity of the terraces, their delicate pinky hue contrasting with the transparent sky-blue water, while the water-crater is shut in by bare walls variously tinged with red, white, and yellow.

If now we transfer our view from the Northern to the Southern island, we find, in the magnificent range of the southern mountains, a series of true alpine lakes, fed by huge glaciers, and dependent for their very existence on ancient glaciers of still greater extent. These glacier lakes commence about latitude 42½° S., but they become

larger and more numerous as we approach Mount Cook, the giant of New Zealand mountains, 13,200 feet high, where we find Lake Tekapo, 15 miles long and 3 wide, and two others, Lakes Tukaki and Oahau, forming the sources of the Waitaki river. The great Godley glacier, which extends above Lake Tekapo, is very extensive, and the view from its middle moraine over the snow-fields of Mount Tyndall, Mount Petermann, and the Keith Johnston range, is said by Dr. Haast to form the grandest scenery he ever beheld in the Alps. Lake Pukaki is 10 miles long and 4 wide, and is shut in by an old terminal moraine, which attains a height of 186 feet above the lake. The view from the outlet towards the Southern Alps, with Mount Cook in the centre, and a wooded islet in the foreground, is described as sublime in the extreme; and, if we imagine villas and parks around its shores, the Lago di Como or Lago Maggiore would not bear comparison with it. It is supplied by the Tasman river, which has its source in the great Tasman glacier, 18 miles long, and the largest in New Zealand.

Farther south the glaciers descend lower, and the lakes increase in size. Lake Wanaku is 35 miles long, and Lake Wakatipu 50 miles, while Lake Te Anau, still farther south, is 40 miles long, and has numerous extensive branches. The bottoms of many of these lakes are far below the sea-level, though they must have been filling up for ages by the sediment carried into them, a proof either that the entire land was once much higher, or that the lakes have been ground out by glaciers, as supposed by Professor Ramsay. The fact that the lakes increase in size and depth as we go south, while on the west side of the island it is only towards the south that the coast is indented by long and winding fiords, whose inner waters are deeper than near their mouths, is strongly in favour of the glacial theory of their origin. On the western side

GLACIERS OF MOUNT COOK. *To face page 552.*

of the mountains there are also numerous glaciers, and one of these, descending from Mount Cook, terminates within 705 feet of the sea-level, and for a long distance is bordered by a magnificent vegetation of metrosideros, tree-ferns, and fuchsias. This is in lat. 43° 35′ S., corresponding to Montpellier and Marseilles in France, and Leghorn in Italy!

The general character of the New Zealand scenery, as contrasted with that of Australia, is well expressed by Mr. Anthony Trollope. He says: "In New Zealand everything is English. The scenery, the colour and general appearance of the waters, and the shape of the hills, are altogether un-Australian, and very like that with which we are familiar in the west of Ireland and the Highlands of Scotland. The mountains are brown, and sharp, and serrated, the rivers are bright and rapid, and the lakes are deep and blue, and bosomed among the mountains. If a long-sleeping Briton could be set down among the Otago hills, and, on awaking, be told he was travelling in Galway or the west of Scotland, he might be easily deceived, though he knew those countries well; but he would feel at once that he was being hoaxed, if he were told in any part of Australia that he was travelling among Irish or British scenery."

4. *Climate.*

New Zealand has of course a very varied climate, extending as it does through fourteen degrees of latitude. No part of the islands suffer from hot winds, and the temperature is generally equable, especially in the North Island, where frost and snow are almost unknown, except on elevated plateaus, and where, towards the extreme north, the climate becomes semi-tropical. The western shores are moister and more agreeable than the eastern,

and the Canterbury Plains on the east side of the South Island experience the greatest vicissitudes of temperature, the annual range of the thermometer being 62°, while at Wellington it is 45°, and at Hokotika, on the west coast of South Island, 48°. The climate of the Canterbury Plains has been said to be a mixture of the climates of the south of France and the Shetland Islands. The rainfall varies between 28 inches at Christchurch and 122 at Hokotika. The coasts of New Zealand are very windy, especially in the straits between the islands; thus Invercargill on Foveaux Straits, and Nelson and Wellington on Cook Straits, have hardly a calm day in the year. Dunedin seems the least windy place on the coast, having had 98 calm days in 1873, while Queenstown, on the Wakatipu Lake, had 142. On the whole the climate is at once mild and bracing; combining a large amount of variety with comparatively few extremes; and it is well fitted for the average English constitution, though less adapted to those in delicate health or with unsound lungs than the brighter skies of Australia.

5. *Geology.*

The geological formation of the two islands of New Zealand differs remarkably. The North Island is essentially volcanic, the South sedimentary. The North is full of volcanic cones, extinct and active craters, boiling springs, lava fields, sulphur, and lakes formed by subsidence. The South has lofty ranges of slate and granite, with Silurian sandstones and limestones, and the valuable green jade, so much prized by the natives for making their choicest weapons; snowy ranges, enormous glaciers, deep alpine lakes, and wide glacial deposits. Of course these distinctions are not absolute; there are some primary rocks in the North, and some volcanic formations in the

South. Gold and coal are found in both islands, but far more abundantly in the South, while deposits of Secondary age cover but a small area in both islands.

Volcanic formations occupy fully one-third of the area of the North Island. Within a dozen miles of Auckland City there are more than sixty cones and craters, from 300 to 900 feet high. For hundreds of miles volcanic conglomerates, cinder-heaps, and lava-streams spread over the country; the thousands of hot springs, solfataras, and mud-volcanoes, have already been referred to, while the three lofty volcanoes—Tongariro active, Ruapahu and Mount Egmont quiescent, vie in grandeur with those of most of the great continents.

Coal, both palæozoic and tertiary, covers a wide area in the South Island. Good coal is also worked at the Bay of Islands, and near Auckland in the north. Gold has been found to occur almost as abundantly as in Victoria, and in many different localities. Till 1860 little was found, when rich fields were discovered in Otago, and subsequently in Westland, Nelson, and Marlborough, while the Thames-Valley gold-field, in the North Island, surpassed all in richness. Much of the gold is found under glacial drifts, and on the west coast the sands of the sea-shore produce it in paying quantities, especially when a gale of wind brings down fresh deposits from farther north. The same wonderfully lucky finds occurred here as in Australia. At the Havelock diggings in Marlborough, three men in felling a tree at the edge of a river, found a pocket under it from which in a few hours they washed thirty ounces of gold. In the Tuapeka diggings in Otago one party obtained thirty-eight ounces in a day, and it was said that any one who could stand the work could gather from one to two ounces a day. In a few months 16,000 persons were collected at these diggings among wild mountain gullies, and all the phenomena

of the Australian "gold-fever" were reproduced. At one time the emigrants arriving at Dunedin from Melbourne amounted to a thousand a day.

Besides gold, other metals are worked more or less successfully. Silver is abundant at Mount Rangitoto; copper occurs at Barrier Island, and tin at the Buller. Chrome iron-ore and iron-sand are also abundant, and will no doubt one day be largely worked.

Fossil remains are rather scarce in New Zealand, and throw little light on its past history. No fossil mammals have been found, and no birds or reptiles except such as are allied to forms still living on the island. The few tertiary shells are closely allied to living species; while the cretaceous and jurassic marine deposits contain ammonites, belemnites, and allied groups bearing a striking resemblance to European forms of the same period; and in the jurassic beds of the Waiparu species of plesiosaurus and ichthyosaurus have been discovered, showing that these ancient saurians had an almost world-wide distribution.

6. *Natural History.*

New Zealand is the largest truly oceanic group of islands in the temperate zone, and, as might be expected, presents a large amount of specialty in all its natural productions. Its flora, when compared with that of other islands of equal extent, is poor in species, since it possesses only about half as many flowering plants as Great Britain. It is, however, wonderfully peculiar, about two-thirds of the species being entirely confined to the group, and even twenty-six of the genera are found nowhere else. The relations of the flora are with Australia and with the Antarctic lands, including temperate South America. A large number of species and genera are common to New Zealand and Australia, but in many

cases it is the New Zealand forms which have migrated to Australia, and not *vice versâ*. There is also the extraordinary fact of the total absence of some of the most common and widespread of the Australian groups of plants; for not a single species of *Eucalyptus* or *Acacia* is found in New Zealand, a fact which absolutely negatives the idea of any former union, or even any recent near approach of the two lands as the cause of the similarities of their floras. No less than eighty-nine species and seventy-six genera are common to New Zealand and South America, but the larger part of these are also found on the Alps of Tasmania and Australia. There are also fifty species common to New Zealand and the Antarctic islands, and only a few of these are found on the mountains of Tasmania.

The great characteristics of New Zealand scenery, as dependent on vegetation, are the forests, the ferns, and the grassy plains. The forests chiefly clothe the mountain ranges; the lower hills are covered with fern; while extensive tracts, chiefly on the west in the North Island, and on the east in the South, are covered with grass and bushes. In the forests there are scarcely any gay flowers and few herbaceous plants,—nothing but shrubs and trees, mostly with obscure green flowers and as destitute of scent as of beauty. Pines quite unlike ours, belonging to the genera *Podocarpus, Dacrydium, Phyllocladus,* and *Dammara,* abound; but generally the forests are much intermixed, and their chief distinctive feature is the abundance and variety of the ferns that grow beneath their shade. Here are splendid tree-ferns 30 or 40 feet high, equalling those of the tropics; exquisitely beautiful filmy-ferns growing on trunks of trees; while rocks, and shady banks, and often the whole surface of the ground, are covered with them in great variety. There are about 130 different kinds of ferns and Lycopods, while the mosses

and Hepaticæ are also wonderfully luxuriant, amounting to nearly 900 different species. A few of the trees bear handsome flowers, such as the *Edwardsia microphylla*, with its magnificent yellow pea-like blossoms; the *Metrosideros robusta*, crowned with scarlet flowers; and the large crimson blossoms of the shrubby *Clianthus puniceus*. But these and the few other showy plants are not enough to compensate for the general poverty of the flora, which has led one writer to remark that "there is no indigenous flower equal to England's dog-rose, no indigenous fruit equal to Scotland's cranberry,"—a statement which, though not literally exact, well serves to show the poverty in fruits and flowers of the New Zealand vegetation. Sir Joseph Hooker, in the introduction to his *New Zealand Flora*, speaks of its monotonous and uninteresting aspect in comparison with that of Tasmania, where "*Orchideæ* of many kinds carpet the ground in spring with their beautiful blossoms; the heaths are gay with *Epacrideæ;* herbs, trees, and shrubs of *Compositæ* meet the eye in every direction; whilst the *Myrtaceæ* and *Leguminosæ* are characteristics both of the arboreous and shrubby vegetation." And he adds—"The difference is so marked, that I retain the most vivid recollection of the physiognomy of Tasmanian mountains and valleys, but a very indifferent one of the New Zealand forest, where all is, comparatively speaking, blended into one green mass, relieved, at the Bay of Islands, by the symmetrical crown of the tree-fern, the pale green fountain of foliage of the *Dacrydium cupressinum*, and the poplar-like Knightia overtopping all."

One of the most valuable and abundant of the forest-trees of New Zealand is the Kauri pine (*Dammara australis*), which grows to the height of 180 or 200 feet, and furnishes splendid timber. Whole towns have been built of it; it is largely exported, and has been recklessly

destroyed by settlers; so that, writing in 1867, Dr. Hochstetter remarks:—"The extermination of that noble tree progresses from year to year at such a rate that its final extinction is as certain as that of the natives of New Zealand. The European colonisation threatens the existence of both, and with the last of the Maoris the last of the Kauris will also disappear from the earth." Besides its timber, this tree produces a valuable gum resembling amber, which is found in large masses at the roots of the trees, and in ground from which Kauri forests have disappeared. It is used for making varnishes, and for other purposes, and several thousand tons are exported annually, of the value, in 1876, of £109,000.

The zoology of New Zealand is no less peculiar and interesting than its botany, perhaps even more so. In common with all remote oceanic islands there appear to be no truly indigenous mammalia, with one or two doubtful exceptions. When first discovered by Europeans, there were two species of mammals—a dog and a small rat. Both are now nearly or quite extinct, but the dog was almost certainly introduced by man, as it is a favourite article of food with both Melanesians and Maoris and would therefore be constantly carried in their canoes. Besides, it was never wild in New Zealand. The native rat, called Kiore, has been destroyed by the imported European rat, and no specimen of it is known to exist. It is therefore uncertain whether it was a true rat or some allied animal; but it was most likely introduced originally through man's agency, and the tradition of the natives that they brought it with them in their canoes is probably true. More interesting is the otter-like animal, reported still to exist in the mountains of the South Island, and which has a native name, Waitokeke. Dr. Haast has seen its tracks, resembling those of our European otter, at a height of 3500 feet above the sea,

in a region never before trodden by man; and the animal itself is said to have been seen by two gentlemen near Lake Heron, but they failed to capture it. It was said to be dark brown, and the size of a large rabbit. On being struck at with a whip, it uttered a shrill yelping sound and disappeared in the water.[1] This evidence seems to render it certain that such an animal exists, and as the only undoubtedly indigenous mammal in New Zealand, it is of immense interest to determine whether it is or is not marsupial—whether its affinities point to Australia or to some other continent. It is to be hoped that this creature will not be allowed to become extinct without a determined effort being made to secure specimens in order to study its structure and its relationship to other mammals.

The common Norway rat is now as abundant in New Zealand as it is in Europe. Cattle and pigs have run wild, the latter multiplying so enormously as to become quite a nuisance. In the province of Nelson three men in twenty months killed 25,000. The other land vertebrates, reptiles, and amphibia, are curiously limited. Snakes are quite unknown; frogs are represented by a solitary species, and that very local, being only found at one spot on the east side of North Island; but lizards, on the other hand, are tolerably plentiful, there being twelve species, all peculiar, and not closely allied to those of any other country. Besides these there is a lizard-like animal, *Hatteria punctata*, of so peculiar a structure as to form a distinct order of reptiles called Rhynchocephalina, intermediate between lizards and crocodiles. Two sea-snakes are found on the coasts allied to those of other parts of the Pacific.

Birds, however, form the most interesting class of animals in New Zealand, since they are tolerably numer-

[1] Hochstetter's *New Zealand*, p. 161, note.

ous, and present a number of beautiful and interesting forms. The elegant black parson-bird, with its white throat-tufts, is beautiful and lively, and is an excellent mimic, imitating the notes of other birds and the cries of animals. There are several fair songsters; some of the pigeons and parrots are very handsome; and there are a good number of fine aquatic birds. In all, there are 145 different kinds of birds known, of which the larger proportion belong to the aquatic and wading groups, only 57 being true land-birds. Almost all these are peculiar to the islands, and of the thirty-four genera in which they are classed, sixteen, or nearly half, are also peculiar. Among the most remarkable is the singular starling (*Heterolocha gouldi*), the "huia" of the natives. It is a glossy black bird, the size of a chough, with handsome orange-coloured wattles. The beak is quite different in the two sexes, that of the male being straight, while the female's is longer and excessively curved in a sickle shape. Such a remarkable difference in the sexes does not occur in any other known bird. Another remarkable bird is the owl-parrot (*Stringops habroptilus*), of a greenish colour, and with a circle of feathers round the eyes as in the owl. It is nocturnal in its habits, lives in holes in the ground under tree-roots or rocks, and it climbs about the bushes after berries or digs for fern-roots. It has fully-developed wings but hardly ever flies, and has lately exhibited a singular taste for flesh, picking holes in the backs of sheep and lambs. It was exterminated in the North Island by the natives, who hunted it with their dogs, and it is now only found in the southern and western parts of the South Island, and will probably soon become extinct. Most remarkable of all the birds of New Zealand is the "Kiwi" or Apteryx, of which there are three or four species in the two larger islands. These are totally wingless and tailless birds, with feathers

resembling hairs, and altogether unlike our usual idea of a bird. They are about the size of a small domestic fowl, with long curved beak something like that of a curlew. They are entirely nocturnal, feeding on insects, worms, and seeds, and as they have no protection from dogs they become rapidly exterminated in all the settled districts.

But the existing Kiwis are only the last survivors of a race of wingless birds of various sizes, the largest exceeding in bulk and height the largest living ostrich. Remains more or less complete of eleven species of these birds, called Moas by the natives, have been found. They differ considerably in structure, proportions, and size, the largest being 10½ feet high and the smallest about 3 feet. Some perfect skeletons have been found, and even remains of skin and feathers. A perfect egg, 10 inches long and 7 broad, was found in a native grave, as well as moa bones in old native cooking-places; so that there is every reason to believe the traditions of the natives, that their ancestors hunted these enormous birds for food. Some remains, however, have been found in caves under thick layers of stalagmite, and others under several feet of alluvial deposits, and these no doubt indicate a period long before the present race of Maoris came to New Zealand.

The fresh waters of New Zealand do not produce many fish, the most abundant being eels, and small fishes called whitebait by the colonists (*Eleotris*), of which there are several species. One peculiar genus (*Retropinna*) is the only fish of the salmon family in the Southern Hemisphere. The most curious facts about the fishes of New Zealand are, that the eel is a species found also in China, Europe, and the West Indies, and that the *Galaxias attenuatus*, a fish somewhat resembling a trout, inhabits Tasmania, the Falkland Islands, and temperate South America, as well as New Zealand.

Insects are very scarce. Only eleven different kinds of butterflies are known, and these are not abundant. Moths are also comparatively scarce. Beetles are better represented, but even these are very few compared with their abundance in other countries with the same variety of climate and luxuriance of vegetation. Bees and wasps are almost unknown, and the Neuroptera and Heteroptera are also very scarce. The Orthoptera are mostly wingless, and there is one huge spiny grasshopper or cricket, whose body is $2\frac{1}{2}$ inches long while its great spiny hind-legs are 4 inches in extent. Land-shells, on the other hand, are abundant, there being nearly 120 species, of which about 100 are peculiar; and many of these are large and handsome, the green *Helix busbyi* being $2\frac{1}{2}$ inches diameter, while the fine orange-mouthed *Bulimus hongi* is 4 inches long. Most of the species are, however, small and insignificant.

7. *Past History of New Zealand.*

Taking into consideration the peculiarities of the flora and fauna of these islands, and the entire absence of any fossil remains indicating a former connection with other continents, we are justified in concluding that, during the whole Tertiary period at least, if not for much longer, New Zealand has maintained its isolation from all other extensive tracts of land. We know that Australia was formerly richer in mammals than it is now, and we may be sure that it possessed an abundance of species and individuals during the entire range of the Tertiary period. If, therefore, there had been any land connection between the two countries during this lapse of time, it is incredible that no mammals should be found in New Zealand, a country so well adapted to support them. The very existence and development of the huge wingless moas is also an indirect proof that no extensive mammalian fauna

ever inhabited the country; for such birds take the place of mammals, and they are never abundant except where the latter are absent, as in the case of the dodo and other flightless birds of the Mascarene Islands. But though New Zealand may never have been directly connected with Australia or South America, it has probably been much more extensive than it is now, and has included the Auckland and Chatham Islands, and perhaps even at some remote period the Kermadec group and Norfolk Island. At a much more recent epoch the two large islands have certainly been connected, since an elevation of only 1000 feet would change the submarine bank on which they stand into dry land, and form a single island more than double the area of the existing group. This greater extent and greater elevation would have added enormously to the area of the snow-fields of the Southern Alps, and to this was no doubt due that great extension of the glaciers, the effects of which are visible far below their present range in huge moraines and excavated lake-basins. Our conclusion is, therefore, that New Zealand is the remains of one of the most ancient, if not the most ancient, of the islands of the globe; that it has undergone many fluctuations in area; that the two islands have been quite recently united, and that at some remote epoch it was many times more extensive than it is now; but that through all these changes it has never, during the Tertiary epoch at least, been united to any other extensive land.

8. *The Maories and the Aborigines of New Zealand.*

The Maories are one of the most important families of the brown Polynesian stock, being those which have developed its peculiar mental and physical characteristics to the highest degree. This is due in part to their having to maintain themselves in a far less favourable climate than

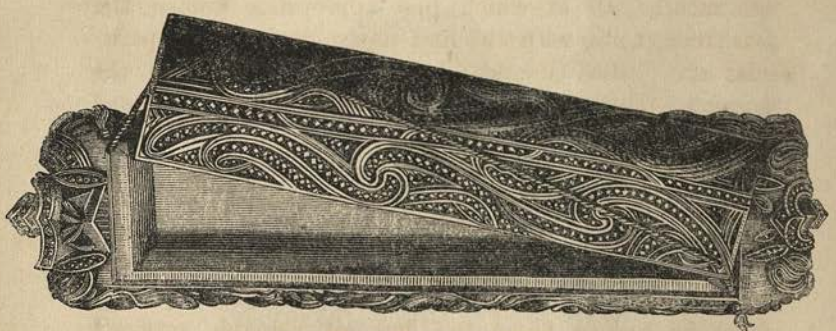
their fellows of the tropical islands. They have no bread-fruits, bananas, and cocoa-nuts to supply food almost without labour, and they have to protect themselves against the vicissitudes of a boisterous and comparatively ungenial climate. They had not even the pig, which furnished such an unfailing supply of food in the other islands, but had probably at first to hunt the now extinct moas as their only animal food, till, when these became scarce,

MAORI TYPE.

they were obliged to feed on their dogs, the only domestic animal they appear to have brought with them. Their only cultivated plants were the sweet potato, the taro, and the gourd; the fern and several other plants supplied edible roots; and these, with a few berries and fruits, and fish of various kinds, made up their means of subsistence. They thus became skilful hunters and fishers, and good agriculturists; and the amount of skill and energy necessitated in these pursuits, in building houses and

canoes, in making clothing, and in forming the various weapons and implements which they required from stone, wood, or shell, furnished the needful stimulus for an active and healthy existence. War too, as among all savage tribes, occupied them greatly, and the construction of forts and defences was added to the regular labours of every community.

The earliest European settlers thus found the Maoris in a state of civilisation not often to be met with among



CARVED NEW ZEALAND CHEST.

a barbarous and savage people. They lived together in villages, in huts well constructed of wood and reeds, ornamented with ingenious and fanciful carvings, and painted with gay-coloured arabesques. They protected their villages with ditches and palisades, and surrounded them with extensive plantations. They manufactured flax from a native plant, and from it wove mats and clothing, which they dyed with various kinds of bark and roots, and ornamented with the bright feathers of birds; and they made cloaks of great value from the dressed skins of their dogs. Their faces and some parts of their bodies were elaborately and elegantly tattooed, more largely in the men than the women, and the heads of great chiefs were skilfully embalmed and preserved, either

as trophies of the fight or in affectionate remembrance of the dead. Although they had no written language, they had numerous songs and proverbs, legends and traditions, transmitted orally from generation to generation. They knew every plant and bird and insect of the country they inhabited, and designated them by distinctive names; and they distinguished the various kinds of rock with a keen talent of observation. They had words in their language for the four seasons, and they divided the year into thirteen months, all of which had appropriate names, the year commencing with the first new moon after a particular star, called Puanga, began to be visible in the morning. They had names for all the chief stars, and also for many constellations, which were called after their resemblance to canoes, houses, garments, weapons, etc. They had measures derived from the human body, as the span, the stride, and the fathom. They had no regular barter, but whatever a friend asked for was given, on the understanding that the giver might in his turn have anything he took a fancy to; but all valuable property appears to have been held by the tribe, and could only be exchanged in this way with other friendly tribes. They had numerous games of skill or chance, many of them exactly similar to our own, as flying kites, skipping-ropes, cat's-cradle, gymnastic poles, wrestling, hide-and-seek, stilts; as well as dancing, diving, and many others. They had a firm belief in a future state, and an elaborate mythology and system of temples, priests, omens, and sacrifices. They were great orators, and a son of every chief had to learn the traditions, laws, and rites of his tribe, and to be an orator and a poet as well as a warrior, a hunter, and a seaman.

The dark side of their character was the practice of cannibalism, which prevailed extensively at the time when Europeans first visited them. But this vile practice

seems always to have been associated with a superstitious belief in the transfer of the qualities of the victim to his devourer. This became one of the chief incentives to war, as to eat the bodies of the slain was supposed to impart courage and ferocity to those who partook of them, and likewise to make their triumph over their enemies complete. War was also carried on as a means of obtaining plunder,—valuable jade weapons and ornaments, beautiful mats, food, and wives, just as in Europe in the middle ages.

WAR CLUB OF NEW ZEALAND.

Missionaries of various denominations have been at work in New Zealand for more than sixty years, and have now converted the whole population, except a few of the older chiefs, to Christianity. Cannibalism, tribal wars, polygamy, slavery, and most of their superstitious practices have been abolished; they have become to a considerable extent educated and civilised; many of them have farms and ships, or are successful traders. But with this apparently beneficial change, their old elasticity of spirit and enjoyment of life seems to have left them. They cannot as a body compete with Europeans. Our habits are not suited to them; our diseases and vices decimate them; their numbers diminish year by year; and, as in so many other cases, we seem to civilise and Christianise only to destroy. When first taken possession of in 1840, New Zealand is supposed to have contained

near 100,000 Maories. In 1856 there were but 65,000; in 1874 they had decreased to 45,740, and it is believed that they are now diminishing still more rapidly. Should, however, the present rate of decrease continue, it will not take more than 150 years to bring about the total extinction of this interesting race.

The Maoris are fully conscious of their approaching fate, a fate in which not only the people themselves, but also the native fauna and flora seem involved. The inevitable process of extinction is vividly described by Peschel, who remarks that even the English grasses are spreading with astonishing rapidity and supplanting the indigenous vegetation. Vernal grass, sorrel, docks, the sow-thistle, and water-cresses are triumphantly invading the domain of the native growths, which are fain to yield before the younger and more vigorous "conquistadores." "Make room for your betters," is the watchword in all these wars between races. Swine, as already stated, have increased to an alarming extent, and commit great havoc by uprooting the ground in search after roots. Yet even this contributes towards the introduction of new plants, for the freshly turned-up soil is quickly occupied by the hardy species intimately associated with European culture, which follow the white man in all his wanderings, and which, already victorious over so many older species, soon displace the last feeble survivors of former geological epochs. The native Polynesian rat, which entered New Zealand with the Maoris, is now being also extirpated by the Norway variety, which has been introduced into the island by ships arriving from England. The European mouse, following close on its track, is reported to be in its turn displacing the Norway rodent. The European house-fly, which presented itself originally as an uninvited guest, is now sent far and wide in boxes and bottles by the settlers themselves, who have observed that its com-

pany is declined and its presence carefully shunned by the far more noxious native blue blow-fly. Hence the Maoris rightly say—"As the white man's rat has extirpated our rat, so the European fly is driving out our fly. The foreign clover is killing our ferns, and so the Maori himself will disappear before the white man."

The traditions of these people lead to the conclusion that they first came to New Zealand about 600 years ago, from some of the islands between Samoa and Tahiti; but some ethnologists put the migration as far back as 3000 years. Their language is a dialect of the Polynesian, most resembling that of Rarotonga, but their physical characters vary greatly. Some are fair, with straight hair, and with the best type of Polynesian features; others are dusky-brown, with curly or almost frizzly hair, and with the long and broad arched nose of the Papuan; while others have the coarse thick features of the lower Melanesian races. Now these variations of type cannot be explained unless we suppose the Maoris to have found in the islands an indigenous Melanesian people, of which they exterminated the men but took the better-looking of the women for wives; and as their traditions decidedly state that they did find such a race when they first arrived at New Zealand, there seems no reason whatever for rejecting these traditions, which accord with actual physical facts, just as the tradition of a migration from "Hawaiki," a Polynesian island, accords with linguistic facts.

9. *Other Islands of the New Zealand Group.*

A brief notice only can be given of these, with special reference to any points of general interest in their natural history or present condition.

STEWART ISLAND (formerly called South Island) is the third island of the New Zealand group, but is of insigni-

ficant size, being only about 40 miles in extreme length, and of such an irregular form that its area is less than 500 square miles. It is mountainous, and well wooded with valuable timber-trees. It has also several good harbours, and there are many fertile valleys. It was originally uninhabited, but is now occupied by a few whalers and sealers, with some natives and their half-breed descendants. The seas around swarm with fish, and there are said to be large deposits of iron-sand equal to that of Taranaki.

THE AUCKLAND ISLANDS lie about 250 miles south of Stewart Island, and consist of one large and several small islands, the most important being about 30 miles long and 15 wide. These islands consist of basaltic rocks with greenstone, and there are basaltic columns 300 feet high and highly magnetic at Peas Head in Laurie Harbour. The islands are mountainous, rising to a height of 1325 feet, and are covered with a fine vegetation of trees, shrubs, and herbage. Some of the trees are from fifty to seventy feet high. The climate is excessively wet and stormy; yet, strange to say, there are here a number of flowers equal in brilliancy to those of tropical or alpine regions. Among these are bright-coloured gentians and veronicas, large purple-flowered Compositæ, gay ranunculi, and a handsome liliaceous plant now cultivated in our gardens—*Chrysobactron hookeri*. This is the more remarkable, as there is nothing to compare with them in the cooler parts of New Zealand.[1] Parrots, pigeons, and honey-sucking birds also inhabit these islands, which are in the same latitude as the south of England.

CAMPBELL ISLAND is about 180 miles south-east of the Aucklands, in S. latitude 52° 33′ and E. longitude 169°

[1] For a probable explanation of the cause of this difference, see the Editor's *Tropical Nature*, p. 238.

9′. It is about 36 miles in circumference, with some good harbours, and is mountainous, rising to a height of 1500 feet; but the hills are less woody than in the Auckland Isles, though the vegetation is in general very similar, the same species of plants being for the most part found in both.

Both the Campbell and Auckland Islands are usually uninhabited, but depôts of provisions are kept on both for the use of shipwrecked crews. Whalers occasionally visit them, but no permanent settlement has yet been made.

MACQUARIE ISLAND is situated as far again from New Zealand as the Auckland Isles, and more to the south-west, being in S. latitude 54° 30′ and E. longitude 158° 50′. It is about 20 miles long, and is covered with vegetation, mostly grassy, though there must be some trees or shrubs in sheltered parts, as a peculiar species of parrot of the genus *Cyanorhamphus* allied to those of the Auckland Isles is found here, and it is the species which extends farthest from the tropics of the entire order of parrots. Macquarie Island is a fine place for seals, and is only visited for the purpose of capturing them.

ANTIPODES ISLAND is really a small group of rocky islands, the largest more than 1000 feet high, and having perpendicular cliffs all round from 200 to 600 feet high, with an immense cave at the N.W. cape. It is covered with a vegetation of long grass, fern, or scrub. It lies N.E. from Campbell Island, and is remarkable as being the nearest land to the antipodes of London, being in S. latitude 49° 42′ and E. longitude 178° 43′, so that it is really the antipodes of Cape Barfleur, a little east of Cherbourg and about 60 miles south of the Isle of Wight. Campbell Island is the antipodes of a point off the west coast of Ireland about 30 miles west of the mouth of the Shannon.

THE CHATHAM ISLANDS are situated about 450 miles east of New Zealand, and lie a little to the south of Cook Straits. They consist of three islands, the largest about 25 miles long, but of a very irregular semicircular and branching shape. It is hilly, but not lofty, and is mostly of volcanic rock, and in the northern part are a number of small lakes. There is a luxuriant vegetation of trees and shrubs, with much boggy land, and there is a good deal of the common New Zealand fern. The plants are generally like those of New Zealand, but with many peculiar species and some handsome flowers. There are thirteen species of true land-birds, eight of which are New Zealand species, and five distinct but allied forms. The natives say that the Apteryx as well as the Kakapo parrot (*Stringops*) formerly inhabited the island, but have been destroyed since 1835.

The first discoverer of these islands was Captain Broughton in 1791. He found an indigenous population, and he describes them as a cheerful race, full of mirth and laughter, and dressed in sealskins or mats. In 1831 a European ship carried about 800 New Zealanders to the islands, and these rapidly exterminated the aborigines, so that ten years later, in 1840, Dr. Dieffenbach found only 90 living beings out of a former population of at least 1200. These people were called Morioris. They spoke a peculiar language allied to that of New Zealand but they exhibited considerable physical differences, and it is not improbable that they were the result of a mixture of intruding Polynesians with aborigines of a lower type.

At present the islands are used for cattle and sheep-breeding for the supply of whalers. The small population of about 150 persons is excessively mixed, and is said to contain examples of Morioris, New Zealanders, Kanakas or Sandwich Islanders, Negroes, Chinese,

Spaniards, Portuguese, Danes, Germans, English, Irish, Scotch, and Welsh.

The KERMADEC ISLANDS are a group of small rocky or mountainous islands to the north-east of New Zealand, and distant from it about 500 miles. The largest is about 12 miles in circumference and 1600 feet high, rugged and covered with wood. They are quite uninhabited, and are only interesting because, from their height and conspicuousness, they form a stepping-stone midway between New Zealand and Tongataboo, and thus render it easy to understand how successive migrations of Polynesians might have reached the former island.

NORFOLK ISLAND is situated nearly midway between New Zealand and New Caledonia, and about 900 miles east of Brisbane, in Australia. It is not quite 5 miles long, with an average width of $2\frac{1}{2}$ miles. Mount Pitt at the north-west corner is 1050 feet high. There are precipitous cliffs round the greater part of the coast, and many small streams fall in cascades into the sea. There are no harbours, but tolerable landing-places in fine weather. The surface is generally a table-land with numerous gulleys, and is covered with grass sprinkled in beautiful park-like fashion with white oaks, and the handsome Norfolk Island pine (*Araucaria excelsa*), which often exceeds 200 feet high. The gulleys and slopes of Mount Pitt are covered with a thick scrub, with tree-ferns and guavas. Phillip Island, a mile and a quarter long, lies three and a half miles south of the main island, is nearly as high, very precipitous, and densely wooded; and there are two or three other small rocky islets. Norfolk Island was discovered by Captain Cook in 1774, and now forms part of the colony of New South Wales. It is a beautiful island, and its climate is mild and uniform when compared with the excessive vicissitudes of tem-

perature experienced in Australia. It was long used as a penal settlement, and has been brought into a high state of cultivation by convict labour. The convict establishment was, however, broken up in 1855, and in the following year the Pitcairn Island community of 194 persons were landed here. The island, with its buildings, 2000 sheep, as well as horses, pigs, and poultry, was given to them by the British Government. They inhabit the old convict town, occupying themselves with agriculture and with whale-fishing. Forty of them returned to Pitcairn Island, and the remainder have increased to about 300, and it is to be hoped they will be no more interfered with, and as far as possible kept from the intrusion of other colonists.

Norfolk Island is interesting to naturalists for its peculiar birds. It has fifteen species of land-birds, eight of which are Australian, while three are peculiar species of Australian genera; but there are three others which connect the island unmistakably with New Zealand. These are the *Nestor productus*, which formerly inhabited Phillip Island but is now said to be extinct; a fine parroquet, *Cyanoramphus rayneri;* and a remarkable white rail, *Notornis alba*. All these are peculiar New Zealand forms, and two of them would be quite unable to pass over any great width of ocean, while the Australian birds are mostly such as fly well, and might easily have migrated to the island. This sufficiently explains why, although the great majority of its birds are Australian, yet naturalists consider this group of islands to belong really to the New Zealand zoological district.

LORD HOWE'S ISLAND is situated S.S.W. of Norfolk Island, and nearly midway between it and Australia, yet this too should be classed in the New Zealand group. The island is mountainous and well wooded, Mount Gower, at its southern end, rising to an elevation of 2830 feet. It

is about $5\frac{1}{2}$ miles long, and from one-third of a mile to a mile and a half wide. It is of volcanic formation, and the low land is said to be very fertile. The inhabitants are Europeans or Americans, mostly connected with whaling. They vary greatly in numbers, so that while in 1859 there were 300, in 1869 there were only 35. They supply whaling ships with pigs, goats, poultry, and vegetables. Most of the birds of this island are Australian; but there is a peculiar wood-hen of the New Zealand genus *Ocydromus,* and a white ground bird has been seen, which is supposed to be the *Notornis alba* or an allied species. The submerged bank on which New Zealand stands extends almost to this island, whereas a deep sea divides it from Australia.

NEW ZEALAND, South Island.

London: Edward Stanford, 55 Charing Cross.

CHAPTER XXVII.

THE COLONY OF NEW ZEALAND.

1. *Colonisation and Population.*

NEW ZEALAND was discovered by the celebrated Dutch navigator Tasman in December 1642, but the first person who carefully examined it and explored its coast was Captain Cook. The earliest white settlers were sailors from whaling ships and runaway convicts from New South Wales. Missions were first established among the natives in 1814, and from this time traders from New South Wales began to frequent the islands and to establish agencies among the Maories. The country had been formally taken possession of by England as early as 1787, but no systematic attempt at colonisation was made for fifty years, when, under the auspices of Lord Durham, the New Zealand Land Company was formed, and in 1839 the first batch of emigrants arrived under Colonel William Wakefield, who had authority to purchase land and select the site of the first settlement. He fixed upon Port Nicholson, on the northern shores of Cook Strait, and founded the settlement of Wellington; and 1200 emigrants arrived from Great Britain before the end of the year. Other settlements were soon made at Auckland, New Plymouth, Nelson, Otago, and Canterbury, the land being bought by various associations—as the Free Church of Scotland in Otago and the Church of England in Canterbury; but in both cases financial difficulties obliged the parties to give up their grants of land to the Crown.

The story of the various attempts at colonisation, of the disputes with the natives about land, and of the various native wars, is far too complex and involved to be entered upon here. Suffice it to say that, after a succession of treaties, massacres, skirmishes, and wars, the country is now at peace; and the rapidly increasing white population will probably deter the yearly diminishing Maories from making any further attempts to resist the wave of European civilisation, which they are well aware must ultimately overtake them. The growth of the population, at first chiefly by immigration, has been continuous and steady. In 1843 it was 13,000; in 1854, 32,500; in 1860 nearly 80,000; in 1865, 190,000; in 1871 nearly 267,000; and in 1877 about 400,000. The gold discoveries have led to the rapid increase of the last twelve years, and this reacts upon agriculture and industry, so that we may be sure the progress of the colony will be permanently advanced by it. Immigration still goes on, and we have every reason to believe that the present large population will continue to grow rapidly for many years to come.

2. *Agricultural and Industrial Pursuits.*

The climate of New Zealand is throughout favourable to agriculture, and there is everywhere a fair proportion of rich land, though this is more abundant in the North Island, owing to the greater extent of decomposed volcanic rocks. About one-third of the surface is still covered with forests, and one-third of the remainder is estimated to be fitted for agriculture, the rest being more or less suitable for pasturage. Nearly 3,000,000 acres are already under cultivation, of which about 350,000 acres were in grain crops. Wheat yields on an average 31 bushels an acre; oats and barley each 36 bushels. The

value of the grain crop for 1877 is estimated at £1,523,000. A large quantity of butter and cheese is manufactured, there being nearly half a million of cattle in the colony. Though not very favourable for wool, a large quantity is produced, chiefly in the South Island, and its value in 1876 was £3,395,816. Agricultural machinery is largely used, there being, in 1876, 18 steam-ploughs, 2744 reaping-machines, and 770 threshing-machines.

New Zealand is most favourably situated for the growth of all the fruits and vegetables of the temperate zone. In the North Island, oranges, lemons, peaches, grapes, figs, and melons thrive luxuriantly; while in the South Island some of these, as well as every out-of-door English fruit, arrive at perfection.

Meat-preserving is one of the important industries, the other exports being mostly raw products of the country. Thus, in 1876, the chief exports were—gum (a resin of the Kauri pine), £109,234; tallow, £109,896; timber, £49,847; hides and leather, £35,915; preserved meats, £21,933; and phormium (or New Zealand flax), £18,285.

In minerals New Zealand, though late in the field, now almost rivals the richest colonies of Australia. In 1866 the greatest quantity of gold was produced—735,376 ounces, of the value of £2,787,520, since which time there have been great fluctuations. In 1873 its value was £2,013,410, and in 1877, £1,407,247. The greatest quantity is found in Dunedin, in the extreme south, and in Auckland, at the opposite extremity of the islands.

No other metals have been extensively worked, but there is much mineral riches at present undeveloped. Silver occurs in the Auckland gold-fields, and has been exported to the value of £54,000; and at Mount Rangitoto a rich silver-mine has been opened. Copper exists, but is not yet worked successfully; and the same may be said of tin. The iron-sand which abounds on some of

the coasts smelts into a fine quality of iron. Coal is being worked at several places, both in the North and South Islands, and some of it is of as good quality as that of New South Wales. Petroleum or rock-oil is also found, equal to that obtained from the United States and Canada; while sulphur abounds in some of the volcanic districts of the North Island.

3. *Railroads and Communications.*

The railway system of New Zealand is exceedingly well developed, no less than 600 miles being open, and 380 miles near completion, while several extensions are in progress. The lines and branches are very numerous, but it will suffice here to state generally the direction and length of the more important.

The greatest of all the connected lines of New Zealand is that which runs along the eastern coast of the South Island for more than 300 miles, connecting Christchurch and Lyttelton with Dunedin, Invercargill, and Campbelltown in the extreme south. From Invercargill a northern branch about 85 miles long connects the town with Kingstown on the beautiful Wakatipu lake. Other short lines in South Island are from Hokotika to Greymouth, from Westport to Tepuru, from Nelson to Foxhill, and from Picton to Blenheim. In the North Island are lines from Auckland northward 17 miles, and southward 40 miles, to be extended; in the southern part of the island, from Napier across the peninsula to Wellington and Foxton, of which the central portions are not yet completed; and a short line from New Plymouth to Waitara. Besides the railways, nearly 2000 miles of roads of various kinds have been made in North Island, and 300 miles in South Island, along which there is an extensive coaching system connecting the railways with all the chief towns.

Monthly mail-steamers pass round the islands, calling at all the chief ports, while ocean-steamers sail regularly to Australia, to California, and to Europe. A small steamer plies from Kingstown to Queenstown, and to the head of Lake Wakatipu.

4. *Political Divisions.*

New Zealand is divided into nine provinces—four in the North, and five in the South Island. These are of very unequal size, and correspond, to some extent, with the original settlement of different parts of the islands. They long maintained a local independence analogous to that of the separate States of the American Union; but since 1875 the local governments have been abolished, and the whole country is administered as one undivided colony. The nine provinces are now termed Provincial Districts, and are divided into 63 counties for purposes of local government.[1] As the provinces differ considerably in their physical features, and will long be referred to as designating the best known and most easily remembered divisions of the country, we proceed to give a short sketch of each.

[1] The names of the counties are as follows:—In North Island 32, namely—Bay of Islands, Coromandel, Cook, Eden, East Taupo, Hokianga, Hobson, Hawke's Bay, Hutt, Kawhia, Mongonui, Manukau, Manuwatu, Patea, Piato, Raglan, Rodney, Rangitikei, Thames, Taranaki, Tauranga, Whangarei, Waitemata, Waikato, Waipa, Whakatane, Wairoa, Wanganui, West Taupo, Waipawa, Wairarapa East, Wairarapa West. In the South Island 30, namely—Amuri, Ashley, Akaroa, Ashburton, Buller, Bruce, Collingwood, Cheviot, Clutha, Fiord, Grey, Geraldine, Kairoura, Lake, Mamatoto, Marlborough, Mangahua, Peninsula, Sounds, Selwyn, Southland, Taieri, Tuapeka, Vincent, Wainea, Waimate, Westland, Waitaki, Waikonaiti, Wallace. Stewart's Island forms one county of the same name.

5. *Provincial District of Auckland.*

The province of Auckland includes the northern half of North Island, and is about half as large as England. Its northern portion is greatly indented, so that it has an extensive coast-line; and it has also many navigable rivers, which serve to bring produce from the interior. There are three natural divisions of the province—the northern peninsula, the east coast, and the Waikato country, the two latter being principally occupied by natives. The land is either a red volcanic loam or a stiff yellow clay. The climate is very mild, corresponding to that of Greece or Sicily. The celebrated Kauri pine is found only in this province and is largely exported for shipbuilding, the trees being sometimes 15 feet in diameter and 150 feet high. The Kauri gum, already referred to, is also a valuable article of commerce. One of the richest gold mines in New Zealand is in the Thames valley in this province. A remarkable feature of Auckland is that throughout the whole of its great extent the settler can scarcely go twenty miles from navigable water either salt or fresh. The surface is for the most part broken land, with low hills and broad valleys, generally covered with dense forest; and there are numbers of volcanic hills and craters, as well as magnificent hot springs, which have already been described. Ferns are more abundant and varied here than in any other part of New Zealand.

The chief towns are: Auckland the capital, Tauranga, Havelock, Ngaruawahia, Shortland, and Grahamstown. Auckland is the largest city in New Zealand, and was for some time the seat of government. It is situated on the southern shores of Waitemata Harbour, while on the opposite coast Manukau Harbour penetrates so far inland that the island is here only six miles wide, and in one

place only a mile. The city is picturesquely situated, the landscape being dotted over with volcanic cones, while it possesses a blending of land and water, of hill and dale, of woody heights and cultivated lowlands, that contributes much of the charm to natural scenery. An extinct volcano, Mount Eden, is only a mile from the city, and its summit affords the best view of the numerous beauties of the city and surrounding country. The population of the town and suburbs is 23,000.

The only other towns of importance are Grahamstown, in the Thames mining district, with 2500, and Shortland, a little to the south of it, with 3500 inhabitants.

6. *Provincial District of Taranaki.*

Taranaki, formerly called New Plymouth, is situated on the western side of North Island, and is comparatively small, having a seaboard of 130 miles, and an area of a little over two million acres. Three-fourths of this is dense forest, the remainder, except where cultivated, being covered with fern or New Zealand flax. The titaniferous iron-sand, which lies from two to five feet deep along the sea-beach, is the only ascertained mineral production of the province. The climate is moist, and there are abundant streams, so that the rich volcanic soil thus watered is extremely fertile. The great natural feature of the district is the volcanic cone of Mount Egmont, which rises to a height of 8270 feet, terminating in an acute snow-covered summit. Its slopes are finely timbered, but are mostly held by native tribes.

The town of New Plymouth is small, but picturesquely situated on the sea-shore, almost at the foot of the noble mountain of Taranaki (or Mount Egmont), the summit of which is about eighteen miles distant. Its population is 2500, and that of the whole province

only 8258. This backward state has been caused partly by native wars, and in part by the absence of any good harbour in this part of the coast.

7. *Provincial District of Hawke's Bay.*

This province is about the same size as Taranaki, and is situated exactly opposite to it on the east coast. It consists of rich alluvial plains and undulating hills, rising gradually from the sea towards the Ruahine mountains, which form its western boundary. There are extensive forests with valuable timber; and the Ahurri plains to the south of Napier, 80,000 acres in extent, form an agricultural district of unsurpassed productiveness, where crops of all kinds can be grown in the highest perfection without manure. The northern part of the province is considered the best in New Zealand for sheep, which are fed on lands sown with English grasses. On the coast vines are grown. The capital town, Napier, has a population of 3514. It is situated on a peninsula in the estuary of the rivers Esk and Tutaekuri, and has a fair harbour. Wool is the chief product of the district.

8. *Provincial District of Wellington.*

The province of Wellington occupies the southern part of the North Island, and is nearly half as large as Auckland, containing about 7,200,000 acres, with a population of 43,383. It is mostly undulating and hilly, with two parallel ranges of mountains in the south, and in the north the lofty Mount Ruapehu, 9195 feet high, and the active volcano of Tongariro. There are many fertile valleys, with abundance of good agricultural and grazing land, while the hills are covered with splendid forests. Wheat and oats are largely grown, and sheep-

farming is also pretty extensively practised, the principal exports being wool, timber, gum, and tallow. Wellington, the chief town, is now the capital of the whole of New Zealand, a dignity it owes to its central position at the narrowest part of Cook Strait. It is situated on the western side of Port Nicholson, which forms a spacious harbour, with docks capable of accommodating vessels of 2000 tons burden. The city has about 11,000 inhabitants, but is increasing. It is built wholly of wood, and must continue to be so built owing to the prevalence of earthquakes in the district. In 1848 the town was almost destroyed, and there was such a panic that the place was near being deserted. The only other town with more than a thousand inhabitants is Wanganui (2600), situated 134 miles north of Wellington, at the mouth of the river of the same name. It is the outlet for the products of a considerable agricultural and pastoral district.

9. *Provincial District of Nelson.*

Nelson is the most northern province of the South Island, and extends 160 miles along the north-west coast. The country is generally more rugged and mountainous than in any other province of equal area. The scenery is grand, with forest, lake, and valley, and the mountains are very lofty, that called Mount Franklin being estimated at 10,000 feet elevation. The climate is delightful, and agriculture is very successful in many of the valleys, which are exceedingly rich and fertile; but the great wealth of Nelson lies in its minerals, which are abundant and varied, and not surpassed in any other part of New Zealand. There are extensive beds of fine iron ore, coal, limestone, chrome ore, lead and copper ores, with gold both alluvial and quartz. Near Collingwood, in Massacre Bay, a tunnel has been made more than 1000 feet long,

which has cut nine seams of coal of a total thickness of 16 feet. Four of these will be worked, some of them in conjunction with layers of ironstone. The quality of the coal is excellent.

Nelson, the capital, is a city of about 6000 inhabitants, pleasantly situated on the shores of a small harbour at the bottom of Blind Bay. Mr. Anthony Trollope says of it—"The site is, I think, as lovely as that of any town I ever saw. Merely to breathe there, and to dream, and to look around, was a delight. Every house was neat and pretty. The summer heats are not great, and all English fruits and grass and shrubs grow at Nelson with more than English profusion."

10. *Provincial District of Marlborough.*

This province is situated in the north-east corner of South Island, and is scarcely larger than Taranaki or Hawke's Bay. It consists of a succession of parallel valleys and mountain ranges, the latter heavily timbered, and the former well suited either for agriculture or pasturage. The soil is often very fertile, the valley of the Wairau being an extensive plain of rich loamy land. The scenery is beautiful and often grand. Pelorus Sound in the north presents an aspect perhaps unequalled for varied and romantic grandeur, resembling in some respects the lochs of Scotland; while the finely-wooded slopes and clear running streams of the interior recall the picturesque seclusion of some Devonshire valleys. The whole population of the province is under 8000. There is some gold in the Wakamarma Valley, but wool and the timber trade are the most important industries.

Picton, the chief port of Marlborough, and formerly the capital, is a small place of about 800 inhabitants, situated at the head of Queen Charlotte Sound in one of

the best and safest harbours in the colony. It is a pretty, picturesque, straggling town, lying pressed in between the mountains and the sea. It is surrounded with bright green fields, and has for immediate background some of the finest scenery in New Zealand; and it enjoys a delightful climate, producing all English fruits and flowers in rich abundance.

Blenheim, the capital, eighteen miles south of Picton, is a somewhat more important town, having a population of about 1000. It is situated on the Wairau River not far from the coast, and is connected with Picton by a railway.

11. *Provincial District of Canterbury.*

The province of Canterbury occupies the central portion of the South Island, from the east coast up to the Southern Alps, its coast-line being about 200 miles long. About one-third of its area is a vast plain, sloping gently down from the mountain ranges to the sea, forming the celebrated Canterbury Plains. This province is most favourably circumstanced for wheat-growing and stock-breeding; in a word, for the production of cereals, meat, and wool, the chief conditions for the prosperity of a young country. Here the climate, while less mild and uniform than in the more sheltered province of Nelson, is exceptionally favourable to cattle-farming, as well as to the growth of European plants and to the health of the settlers. It resembles, in this respect, the best English climate, though drier, free from fogs, and far less exposed to winter frosts. This region enjoys the cool and healthy breezes from the snowy ranges of the interior and from the polar icebergs. The atmosphere is doubtless always agitated, the phenomenon of a perfect calm being here unknown, yet the effect, so far from being injurious, is actually beneficial in strengthening the ner-

vous system. European domestic animals and vegetable products flourish and increase with extraordinary rapidity, while the fertile soil rewards the labourer's care to a really wonderful extent. Owing to the goodness of the natural pastures, here is the great sheep district of the colony, and this gave a considerable amount of prosperity to the island before any gold discoveries had been thought of. The chief industrial products are wool and grain; but besides these there is a large export trade in flax, provisions, skins, leather, and dairy produce. Silk is also produced in some parts which are suited to the growth of the mulberry tree.

Christchurch, the capital town, is situated on the river Avon, about eight miles from the port of Lyttelton, with which it is connected by a railway tunnelled through a hill for a distance of nearly two miles, at a cost of £200,000. The city is situated in a level country of an especially English aspect, the land being divided into small English-looking fields, with English grasses and English hedges. It has many fine houses and elegant villas, and the Government buildings, built of stone in the Gothic style, resemble some of our university colleges. The Museum contains a wonderful collection of skeletons of the extinct moas, the gigantic wingless birds which once inhabited New Zealand. The population of Christchurch is 10,294. Lyttelton has about 3000; Timaru, in the southern part of the province, 2000; and Kaiapoi, twelve miles north of Christchurch, 1000.

12. *Provincial District of Westland.*

This once formed part of Canterbury, from which it is divided by the almost impassable chain of the Southern Alps. It is a long, narrow strip of country, about 200 miles by 30 wide, rising steeply towards the mountainous

interior. It is well wooded, and all the rivers abound in fish; but it is chiefly celebrated for its rich gold-fields, which have drawn to it a great influx of population. The diggings are principally alluvial, and are often of great depth; but quartz lodes have also been found, and give the prospect of a permanent gold-field. It is here that the sands on the sea-shore are impregnated with gold, often to such an extent as to pay for washing them. Besides gold, there are coal, lead, and silver ores, copper, iron, and tin; but none of these have yet been systematically worked. The population of the province in 1877 was 17,000. Hokotiki, the capital, and the chief town on the west coast, has a population of about 3000. Having no harbour, it is sometimes difficult of access.

13. *Provincial District of Otago.*

Otago occupies the whole southern extremity of New Zealand, and though one of the youngest of the settlements, bids fair to become the most important. It has grand mountains with glaciers and alpine lakes, noble forests, lofty downs suitable for sheep-grazing, and fertile lowlands well adapted for agriculture. On the west coast are a series of deep inlets resembling the fiords of Norway, while its mountains rise to more than 9000 feet above the sea. Gold was discovered in 1861, and numerous gold-fields have since been opened over a large area, including both alluvial deposits and quartz veins. Up to 1877 gold to the value of more than 14 millions sterling has been exported.

Dunedin, the capital of the province, and the most important commercial city in the colony, is picturesquely situated on a bay running nine miles inland from Port Chalmers. Mr. Anthony Trollope says that "Dunedin is a remarkably handsome town, and, when its age is consi-

dered, a town which may be said to be remarkable in every way. The main street has no look of newness about it. The houses are well built; and the public buildings, banks, and churches are large, commodious, and ornamental." It has Botanical and Acclimatisation Society's Gardens, with cricket-grounds and a race-course, and is encircled by a reserve called the Town Belt, through which a carriage drive is being made. The population with the suburbs is 27,000, and that of the whole province 115,680. Other important towns are Invercargill, formerly the capital of Southland, with 2500 inhabitants; Port Chalmers, with 1500 inhabitants; and Oamaru, in the north of the province, with 2800.

14. *Government, Education, Religion, etc.*

New Zealand possesses a constitutional government similar to that of some of the Australian colonies. It consists of a Governor appointed by the Crown, an Executive Ministry, and a Parliament of two Chambers. The Legislative Council consists of 45 members appointed by the Crown for life. The House of Representatives consists of 88 members—32 for the North Island, 52 for the South Island, and 4 Maori members—the term of office being five years, and the members being paid £157:10s. each session for expenses. The qualification, both for voters and candidates, is a £5 country or a £10 town rental, or a freehold worth £50, so that it amounts practically to household suffrage.

Education is admirably provided for in this colony. By an Education Bill, just passed, public schools are provided, a capitation fee of ten shillings per child being paid, or £2 for a family. State aid is also given to national and denominational schools. The higher education is of a superior kind, and most liberally endowed.

There is a university, with a royal charter, whose degrees rank as equal to those of English universities. The Canterbury College has an endowment of 350,000 acres of land, judiciously selected in various districts, and producing a rental of several thousands per annum. In addition there are other landed endowments for education, including elementary and science schools, a museum and library, a college of agriculture, and a normal school for the instruction of teachers. At Dunedin there is a university, or more properly a college, on which 200,000 acres of land have been settled, while the buildings have already cost £30,000. There is also a school of art, a boys' and girls' high school, and district grammar schools, besides athenæums and public libraries in almost all the country towns and villages. In the provinces of Wellington, Nelson, and Auckland, there are also colleges affiliated to the University of New Zealand, with ample provision for elementary instruction. This general dissemination of knowledge will assuredly produce good fruits in a people able to conduct their own affairs with skill and discretion, and gives promise of a bright future for what has well been termed the Great Britain of the south.

Religion in New Zealand is altogether free and independent of State control, except that all ministers are registered, so that they may legally perform the marriage-ceremony. The Church of England is the most numerous in adherents, having 172 churches. It has six bishops, residing at Auckland, Napier, Wellington, Nelson, Christchurch, and Dunedin. The Presbyterians rank next in order, having 125 churches. Then follow Roman Catholics, Wesleyans, and in very much smaller numbers almost all the other sects and religions professed by civilised people. Dividing the population into Protestants and Roman Catholics, which together include the

great majority, the former number 243,761, the latter, including the Greek Church, 40,412 ; while Chinese and other pagans amount to 4764. These numbers are according to the census of 1874, and have since materially increased.

APPENDIX.

PHILOLOGY AND ETHNOLOGY OF THE INTEROCEANIC RACES.

By A. H. Keane.

1. *Area.*

The region here dealt with comprises roughly, and almost exclusively, the Indian and Pacific Oceans, and is therefore limited west and east by the African and American Continents, north by the south Asiatic seaboard, reaching farther east northwards to Bering Strait, while merging southwards with the Antarctic Ocean. It will further include the peninsula of Malacca, on the Asiatic mainland, which belongs ethnically to this domain; but will, on the other hand, exclude Ceylon; all the Chinese Islands except Formosa; the Japanese, Kurile, Aleutian Archipelagoes; the Prince of Wales, Queen Charlotte, Vancouver, Galapagos, and other groups belonging both geographically and ethnically to the Asiatic and American continents. Its extreme eastern and western limits come thus to be marked by Madagascar and Easter Island (45° E.–110° W. long), its northern and southern by Hawaii and New Zealand (23° N.–46° S. lat.).

2. *Dark and Brown Types.*

Here we find ourselves in the presence of at least four fundamentally distinct stocks, or at least which must for the present be regarded as such. Of these, three are of a distinctly dark type, the fourth of a lighter complexion, variously described as brown, olive, or yellowish brown, cinnamon, but generally of some more or less deep brown or ruddy-brown shade. Of this lighter stock, again, there are three great divisions, thus yielding altogether six main groups for the whole area. To these broad divisions, based

on physical considerations, the philological classification here adopted corresponds on the whole very fairly. In other words, the three dark races, of radically distinct physical types, speak languages which also belong to radically distinct linguistic types, while the three branches of the brown stock are fundamentally one in speech, no less, or rather more decidedly, than in physique.

3. *Nomenclature.*

Nevertheless, the mutual affinities and migrations, as well as the most suitable collective names of all these various races, have occasioned much controversy, many points of which remain still to be decided. Hence, before proceeding to their definite classification, it may be well to say a few words on the question of their nomenclature, and, where necessary, in vindication or explanation of the terminology here adopted. A paper on the subject was read before the Anthropological Institute, on January 7, 1879, by Rev. S. J. Whitmee, advocating certain innovations or reforms proposed jointly by himself and the writer. In the discussion that ensued, although no practical result was arrived at, some of these changes were favourably received, and although others were less fortunate, it was generally admitted that a reformation of some kind was much needed.

4. *Interoceanic—Negrito.*

On that occasion, the term *Interoceanic* was suggested, and is here retained as perhaps the most appropriate collective name under which to group all the races in question. *Australasian* is obviously defective, while *Oceanic*, being commonly restricted to the *Pacific*, seems to exclude the Indian Ocean, which is conveniently included under the fuller form of *Interoceanic*.

For the three dark races the terms *Austral*, *Negrito*, and *Papûan* are selected, without excluding *Melanesian* as a good alternative for one branch of the last-named, as will be seen further on. Austral calls for no special remark, being obviously the most fitting name for all the aborigines of Australia, whether comprising one or more types, as some suspect. Under this head will also be included the Tasmanians, although many distinguished anthropologists seem inclined to group that extinct race with the Melanesians.

Nor need much be said regarding the term *Negrito, i.e.* "Little Negro," long applied by the Spaniards to the dark dwarfish tribes in the interior of Luzon, and some others of the Philippine Islands. Here it will be extended to the dwarfish negroid tribes in the

Andaman Islands and interior of Malacca, but to no others. These three seem mutually connected, and are in all probability the last scattered remnants of an autochthonous dwarfish race formerly diffused over the Eastern Archipelago and adjacent Asiatic seaboard Those of the Philippines are the *Aëtas*, Aïtas, or *Itas* of Spanish writers, a term in Tagala meaning *black*, and being the same as the Malay هيتم (hêtam). The Negritos of the Andaman islands occupy the whole group, and are divided into a large number of tribes often collectively known as *Mincopies*, a term here consequently retained for that branch of the race. For the same reason the Malay term سمڠ = *Samang* will comprise the Bilas and other Negritos of the peninsula of Malacca.

5. *Papûa—Alfuro.*

For the third dark race the long-established *Papûa* seems in every way preferable to *Melanesian*. It is descriptive of the frizzly hair (Malay ڤاڤوءه = *papûwah*), perhaps on the whole the most marked physical characteristic of this race, which is now known to exist either in a pure state or mixed with other elements, in all the islands stretching from about the meridian of Floris eastwards to Fiji. The term will here accordingly receive its legitimate extension under the forms of Sub-Papûan, East and West, so as to embrace the whole of this area in the way more fully set forth farther on.

This convenient application of the word will have the further advantage of enabling us to dispense with the obnoxious term *Alfuro*, which, as popularly used, is as meaningless as it is mischievous.[1] Whatever its origin, for which there are some half-dozen

[1] A curious illustration of the confusion caused by this word is afforded by R. N. Cust's remarks on the subject in his *Sketch of the Modern Languages of the East Indies* (1878), at p. 146, where he makes a distinct group called "Alfurese-Negrito. Under *Negrito* he evidently includes both the true Negritos and the Papûans, and the *Alfurese* he regards as "totally distinct from the brown Malay and black Negrito." Yet he here couples them with the Negritos, adding that "they are wild, savage, pagan head-hunters," and that the word "is written Alfora, or Harafora, or Turaja." There are certainly many forms of the word, but it will take a large amount of credulity to accept *Turaja* as one of them. There is a fierce wild tribe in the very heart of Celebes known by this name, and who would be naturally spoken of by some writers as also "Alfuros," hence possibly the confusion. It may be added that the languages described as "Negrito-Alfurese," are nearly sub-Malayan, and in some cases sub-Papûan idioms spoken in some districts and villages, chiefly

claimants, and whatever its correct form, for there are at least a dozen different varieties, Alfuro is a word which can no longer have a place in the vocabulary of the scientific ethnologist. In the mouth of the Malays it never had any distinct ethnical significance, and has always been used by them simply to designate the non-Malay, or rather we should say, the non-Mohammedan and heathen tribes in Ceram, Buro, Floris, Jilolo, and other East Indian islands occupying a lower stage of civilisation than themselves. Thus, C. B. H. von Rosenberg, in his *Malayische Archipel* (Leipzig, 1879), speaks *passim* of Alfuros in contradistinction not to Malays, Papuans, or other races, but simply to Moslem and Christian, as at p. 26 of part ii.: "26 villages stretch along the coast [of Ceram], of which 5 are inhabited by Christians, 3 by Mohammedans, 15 by Alfuros, while 13 have a mixed population." This passage may also serve to explode the popular idea that the Alfuros were the aborigines of these islands, driven into the interior by the non-Malay invaders, for they are here represented as dwelling on the coast, peacefully intermingled with their Moslem and Christian kinsfolk. In fact, Alfuro, as Dr. Hamy and other French anthropologists are beginning to perceive, means practically nothing more than non-Mohammedan, rude, uncultured, free, independent; thus corresponding somewhat to the words *paganus* = villager, rustic, non-Christian, *heathen* = dweller on the heath, idolater, etc., as used by the early Christians. Hence Alfuro, lacking all ethnical significance, can have no place in our classification.

6. *Malayo-Polynesian—Indo-Pacific—Mikronesian—Mahori.*

The three dark races, being, as stated, fundamentally distinct, can have no common collective designation. But the three brown races, forming one ethnical, or at least one linguistic family, require to be grouped together by some common appellation. Humboldt's "Malayo-Polynesian," though still in current use, is generally felt to be so unsatisfactory that it holds its ground only for want of a better expression. *Polynesian* itself is hopelessly vague, embracing such fundamentally distinct types as, for instance, those of the Samoan and Solomon groups. Popularly it comes to be synonymous with "South-Sea Islanders," to which no definite scientific

in Minahasa, N. Celebes. In other respects the chapter on the "Malayan Family" is singularly defective. Thus, under the heading "Philippine," there are given twelve languages only, and no dialects. But F. Jagor (*Travels in the Philippines*, 1875) quotes at p. 49 from a work of Barentes, the names of no less than twenty-seven distinct languages officially recognised, besides which there are dialects innumerable spoken both by the Malayan and Negrito wild tribes. See General Scheme of Philippine Languages, p. 623.

meaning can be attached. The compound term is still more objectionable, as positively misguiding and calculated to countenance the vulgar error that the Pacific or eastern branch is somehow affected by, or largely made up of, Malayan elements. Hence Malayo-Polynesian cannot continue much longer in use, and it is satisfactory to find that it has already been discarded by the distinguished editor of the present work. At the meeting above referred to, the expression "Indo-Pacific," proposed by this writer as a substitute, seemed to meet with general favour, and is here provisionally adopted. It has the advantage of indicating with some precision the *habitat* of this great linguistic family, and is at least far more accurate than the parallel expression *Indo-European*, commonly accepted as the collective name of the Aryan races. In the two forms, however, the first component bears, of course, different meanings, in Indo-Pacific referring to the Indian Ocean, and in *Indo-European* to the Indian mainland, or rather, to the northern portion of it.

For the western branch of the family there is fortunately no need of making any change. The national name *Malay* meets all requirements, and is all the better that its origin is lost.[1] For the two divisions of the western or Polynesian branch, good collective names are much needed. The term *Mikronesian*, conventionally applied to the north-western group, is here provisionally retained; and Ranken's *Mahori* having been accepted by the editor as equivalent to Polynesian, and as an alternative name for the large brown races of the eastern archipelagoes, this term, however otherwise objectionable, is here also adopted for the sake of uniformity.

7. *Comparative Table of Physical Characteristics.*

The outward and mental qualities of all these races have been so ably described by the editor of this work, than whom no one can speak with greater authority on the subject, that any further account would necessarily involve much needless repetition. The subjoined comparative table, however, of their more salient physical characteristics, slightly supplemented from Professor Flower's excellent monograph on *The Native Races of the Pacific Ocean* (p. 51), may be found useful:—

[1] The attempt to connect it with the Javanese *m-layu*, "to run," "to flee," will not bear discussion. Being a verb, it could not mean "fugitive," as some have supposed; nor is it credible that a people would either assume or accept from their neighbours a term of reproach as their national designation.

Race.	Stature.	Colour.	Hair.	Beard.	Cranium.	Facial Index.	Nose.
Australian.	Medium. 5 ft. 4 in.	Blackish.	Straight or waved.	Well developed.	Dolicho-cephalic.	Prognath-ous.	Platyrhine.
Tasmanian.	Medium. 5 ft. 3½ in.	Ditto.	Frizzly.	Ditto.	Meso-cephalic.	Ditto.	Ditto.
Melanesian (Papuan).	Variable. 5·4 in.-5·7 in.	Ditto.	Ditto.	Ditto.	Dolicho-cephalic.	Ditto.	Ditto.
Negrito.	Very small. 4 ft. 8 in.	Black.	Very frizzly.	?	Brachy-cephalic.	Mesognath-ous.	Mesorhine.
Malay.	Small. 5 ft. 2 in.	Light brown.	Straight.	Absent.	Ditto.	Ditto.	Ditto.
Polynesian (Mahori).	Tall. 5 ft. 10 in.	Ditto.	Ditto.	Scanty.	Ditto.	Ditto.	Leptorhine.
Italian (added for comparison).	Medium. 5 ft. 5 in.	White.	Straight or waved.	Well developed.	Meso- or brachycephalic.	Orthognath-ous.	Ditto.

Adopting the nomenclature as above determined, we get the subjoined :—

General Scheme of Interoceanic Races and Languages.

- **Dark Races.**
  - I. Austral . . — Australian, Tasmanian (?).
  - II. Negrito . . — Aeta, Samang, Mincopie.
  - III. Papûan . .
    - Papûan Proper—Interior and west, New Guinea, with adjacent islands.
    - Sub-Papûan East—East coast, New Guinea, and islands east to Fiji.
    - Sub-Papûan West—Islands, Indian Archipelago, west to Floris.
- **Brown, or Indo-Pacific Races.**
  - IV. Mahori . .
    - Samoa, Tokelau, Ellice, Niuē, Tonga.
    - Tahiti, Marquesas, Tuamotu, Hawaii.
    - Mōtu, Kerapuno, Raro, etc., Mentâwey ?
  - V. Mikronesian
    - Pelew, Caroline.
    - Gilbert.
    - Marshall.

Brown, or Indo-Pacific Races.	VI. Malayan . .	Malayan Proper—Orang-Malâyu, Orang-Banûwa, Orang-laut.
		Sub-Malayan West—Atyeh, Batta, Rejang, Lampung, Java, etc.
		Sub-Malayan East—Bali, Madura, Celebes, Borneo, etc.
		North-east Branch — Philippines, Sulu, Formosa.
		South-west Branch — Madagascar, Hova, Betsimisaraca, Sakalava.

I. The Austral Races.

Under this head are grouped the Australians proper and the Tasmanians, though the latter are by most anthropologists supposed to have been more nearly related to the Melanesians. The above table of physical characteristics, however, shows that they agree almost in every respect with the Australians; but a great difficulty is presented by the hair, which being frizzly,[1] seems to connect them more with the Papûan stock. Unfortunately, but little light can be thrown on the subject of their language, of which only a few scattered fragments have survived. It seems on the whole to have resembled the Australian in structure. But mere similarity of structure is of itself no proof of a common origin unless combined with identity of roots; and here it shows some very striking coincidences both with the sub-Papûan languages of the Louisiade, New Hebrides, and other Pacific islands, and with those spoken along the south coast of Australia. "The natives of Tasmania were darker, more strongly built, and generally less pleasing in aspect, than the people of the continent. Their hair was woolly and crisp, and some bore a likeness to the African negro. Their aspect was different from that of the Australians. In their form, their colour, and their hair, they were rather Papûan than Australian. Many words in their language, however, coincide with words in the dialect of King George's Sound, the Gulf of St. Vincent, and the South-eastern parts of the continent; and it might be assumed, therefore, that the connection between the inhabitants of the island and the continent was clearly established. But we must not overlook the Papûan affinities of the Tasmanian dialects. Many words are the same as those in the languages spoken in New Caledonia, in Mallicollo, and in other islands of the Melanesian division." (Brough Smyth, *The Aborigines of Victoria*, introduction, lxix.)

[1] Cook, who visited them in January 1777, describes it as even woolly; "as woolly as that of any native of Guinea."—*Third Voyage*, i. 96.

Altogether the ascertained data would seem to point at a mixture of the two races in Tasmania, the Papûan on the whole predominating ; and this view seems to receive some confirmation from the fact that the island was at no very remote geological epoch connected with the mainland. But, pending a definite solution of the question, there are sufficient points of contact between them to justify us in provisionally grouping the Tasmanians with the Australians, from whom "some tribes were scarcely distinguishable." (B. Smyth, ii. 379.)

The Tasmanians were divided into a great number of tribes, many speaking distinct languages, or at least dialects, nine varieties of which have been recognised. The languages on the east differed very decidedly from those on the west coast, but all had certain features in common, such as the absence of any definite order or arrangement of the words in the sentence, the expression of modal, temporal, plural, and other relations in a supplementary way, more by tone, manner, gesture, than by particles or inflexions, and lastly, the absence of abstract terms. Thus there was no word for *tree* in general, and qualities were expressed by material imagery, that of hardness by comparison with a stone ; a round object was "a thing like a ball, or like the moon ;" a tall man was "long legs ;" and so on. The languages, of which a few specimens have been preserved, are those of

Macquarie Harbour, on W. coast.
Oyster Bay, on S.E. coast.
Ben Lomond, on N.E. coast.
Stony Creek, in the centre (Ross, Campbelltown, etc.)
Deloraine, on the West.
Circular Head, on the North.
Eastern Marshes, near Oaklands.
Bruni Island, off S.E. coast.

The Tasmanian race, which, owing probably to long isolation and to mixture, presented several peculiarities distinguishing them from all others, became extinct with William Lanney or Lanny, "the last man," and Truganina or "Lalla Rookh," "the last woman," the former of whom died on March 3, 1869, the latter in June 1876.

The *Australians* also are fast disappearing, and they will have probably become extinct long before the question of their affinities is likely to be settled. The theory, however, of an "Australoid family," embracing the Australians, the Dravidians, and other southern Indians, must for the present be regarded as somewhat visionary. Advocated by Pickering, Logan, and Latham, and

popularised by Huxley, it rests on little more than a certain vague resemblance between their physique and the structure of their languages, implying no necessary racial affinity, especially in the face of so many almost insurmountable difficulties. In any case, the argument, based on the supposed resemblance of the Indian throwing-stick to the Australian wonguim or boomerang, is worthless. There is no real affinity between the two weapons, and the Indian weapon "under no circumstances whatever could be made to behave as the wonguim does." (B. Smyth, i. 323.)

The Australian languages seem to be all cast in one uniform mould, and the general opinion now is that they have all a common origin. Assuming the unity of the race—a doctrine, however, which is far from being so universally accepted—its speech must necessarily have had a common starting point; but it cannot be shown to have any necessary connection with the Dravidian or any other linguistic family. All the Australian tongues are agglutinating, and are characterised especially by their simple phonetics, rejecting all the sibilants but not the aspirates as is often asserted, by a preference for suffixes, by the absence of relative pronouns and generally of the article and gender, by the accent falling usually on the penultimate, by dual forms, by plurality expressed by numerals and other words prefixed and occasionally modifying the root, by regular conjugation, extensive use of onomatopoeic terms, and custom of tabooing words much after the fashion of the Maheri people.

Indeed the comparative perfection of their speech, standing in such striking contrast to their degraded state, has occasioned some surprise. But the phenomenon is far from rare, and still more remarkable instances are, for instance, the rich Hottentot declension and the marvellously intricate Sonthal conjugation. The explanation, however, of this apparent contradiction seems obvious enough. These savage tribes, owing to unfavourable outward conditions, require long ages to make any perceptible advance in general social culture. But through continuous practice they will often bring to surprising perfection the few instruments indispensable to the maintenance of the state at which they may have arrived. Hence their speech, like their boomerang, is now found to be admirably adapted to their requirements. They are always chattering and always chasing, and the instruments needed for both pursuits are equally perfect after their kind. "The illusion of those who believe that the language of savages is simple would be rudely dispelled if they addressed themselves to an examination of the dialects of any part of Australia. They are highly inflected, complex, and many of the sentences are so constructed as to make a translation impossible." (B. Smyth, Introduction, lxiii.)

The attempts made to connect these languages with the Aryan, Semitic, and other families, will not bear serious discussion. A single specimen of the sort of verbal resemblances adduced in support of these theories must suffice. The native work *Kiradjee, Korajî,* doctor, or rather primarily wizard, priest, is compared with the Greek χειρουργός, surgeon. But this Greek word being from the roots χείρ (hand) and ἔργον (work), it is obvious that it cannot be compared with *Kiradjee* until this word be also shown to be similarly composed. Such a discovery would indeed be startling, and would go further to show some relationship between Greek and Australian than a thousand etymologies based on an utter disregard of the laws regulating the growth of all articulate speech.

Beyond establishing their primitive unity it would be idle to attempt any strictly scientific classification of the Australian tongues. Hence it will be sufficient here to group them according to their several geographical areas. It may be mentioned that these languages, especially in the south and east, are usually named after their respective words expressive of negation. Thus the Kamilaroi, Wol-aroi, Wira-iaroi, etc., are named from *kamil, wol, wira,* etc., meaning "no;" but Piku-mbul, exceptionally from *piku=yes.* This last may be compared with Dante's "lingua del *si*," and the general mediæval practice in Europe.

TABLE OF AUSTRALIAN TRIBES AND LANGUAGES.

Cooper's Creek.	Deerie.	Taoungurong.	Brabrolong.
	Yantruwunter.	Tangambalanga.	Yarra-bandini.
	Bande Patchaditti.	Pangurang.	Yak-kumban.
	Murda Pinna.	Pallanganmiddah.	Tarrawarrackel.
	Tingatingana.	Dartgart.	Bellûm-bellûm.
		Barnawartha.	Wollum.
		Emu Mudjug.	Moomoo.
		Gnurellean.	Ngattban.
		Echuca ; Darty-Darty.	Bundahwarkkani.
		Moaba ; Yairy-Yairy.	Jajowerong.
		Gunbower.	Witouro.
		Waiky-Waiky.	Boul-Boul.
		Marowra.	
		Wamba-Wamba.	
		Yako-Yako.	
		Bura-bura.	
		Watty-Watty.	
		Litchoo-Litchoo.	
		Yerre-Yerre.	
		Yelta.	
		Cornu.	
		Jhongworong.	
		Lail-buil.	
		Jakelbalak.	
		Kromelak.	
		Waanmung Kur.	
		Kapumbâra.	
		Dûwinbarap.	
		Jackalbarap.	
		Whitewurndink.	
		Kerabialbarap.	
		Murra-Murnabarap.	
East Central, Liverpool Plains, Barwan, etc.	Duli.		
	Dinoun.		
	Murîira.		
	Bilba.		
	Mute.		
	Murai.		
	Wiradhurri.		
	Kogai.		
	Kingki.		
	Paiamba.		
	Pikumbul.		
	Wailwun.		
	Wiraiaroi.		
	Wirataroi.		
	Wolaroi.		
	Turrupul.		
	Ninganinga.		
	Koinberri.		

Kamilaroi.

Murray and Goulburn Rivers.

West Victoria.

Gippsland ; East Victoria.

		Burhwundeirtch.	
		Ynarreeb-Ynarreeb.	
		Moporh.	
		Kolore.	
		Coonawanne.	
		Warnambool.	
		Tooram.	
		Keilambeitch.	
		Leehoorah.	
		Korotch.	
		Mumkelunk.	
		Weereitch.	
		Terrin Challum.	
		Purteet Chowel.	
		Terrumbehal.	
		Werruparrong.	
		Moocherrak.	
		Punnorinjon.	
		Neitcheyong.	
		Yourwychall.	
		Narragoort.	
		Mullungkill.	
		Barrath.	
South Coast.		Narrinyerri.	
		Wawurrong.	
		Parnkalla.	
		St. Vincent Gulf.	
		Boonoorong.	
		Adelaide.	
		Krowithun.	

Wimmera (Victoria).

West Australia.

Tirarop.	
Nocognok.	
Palarop.	
Tondorop.	
Mondorop.	
Jirajiok.	
Aiawong.	
Perth.	
Swan River, etc.	
King George's Sound.	

N. and E. Coasts.

Moreton Bay.	
Port Jervis.	
Dippil.	
Dieyerie.	
Croker Island.	

This is far from including all the known tribes and languages, most of which will, however, be found in the Alphabetical List. The original unity of the languages is deduced from such considerations as these: A general accordance in their phonetics as shown by the universal rejection of the sibilants; a common stock of primitive words, such as eye, tongue, hand, tooth, blood, sun, moon, and especially several personal pronouns; the feeble development of the idea of number, and the general agreement over a vast area in the word for *two;* the use of the dual, of suffixes, and of duplicate terms for the same object. At the same time it cannot be denied that there often exist profound discrepancies even amongst neighbouring tribes, as may be seen from the subjoined comparative list of a few simple words in two neighbouring dialects, spoken about New Norcia, West Australia:— [1]

	East New Norcia.	*North New Norcia.*
arm	marca	unai
air	mar	plerang
tree	pono	tampa
beard	n-anga	indu
much	bulla	milaagnaran
heat	piroc	uàru
tooth	n-olgo	irai
one	chegu	tombar
two	guggial	ulaia
three	mau	ulaiaconci

II. The Negrito Races.

Aëtas—Samangs—Mincopies.

Of these the Aëtas are the most numerous and best known. They seem to be unquestionably the autochthonous people of the Philippine Archipelago, where they are still known to exist in the more inaccessible parts of the five islands of Luzon, Negros, Panay, Mindoro, and Mindanao. Here they number altogether about 25,000, and they may also very likely be found in Palawan and Formosa. Of their languages we know little beyond the fact that the various tribes speak quite distinct and mutually unintelligible dialects. Fifteen such dialects have been recognised in Luzon alone. Although quite dwarfish, their mean height being about 4 feet 8 inches, the Aëtas are described as well made, with soft and frizzled hair, nose a little flattened, and in colour and appearance "less black and less

[1] From Bérengier's Vocabularies in *Les Missions Catholiques* for November 22, 1878.

ugly" than the African negro. They have no fixed abode; live mostly on fruits, roots, and game; and have maintained a constant warfare with the brown race probably ever since the two met on common ground in these islands. The name is sometimes written *Aïgta;* but from the etymology given further back it will be seen that the *g* has been wrongly introduced.

Closely related in physique to the Aëtas are the SAMANGS of the Kedah Mountains and elsewhere in the peninsula of Malacca. In this extreme south-eastern corner of Asia we meet with two indigenous races—the Samang Negritos and the *Orang-Benûwa, i.e.* "men of the soil," of Malayan stock. But the priority of possession must certainly be given to the former, were it not otherwise probable that the Malays are more recent intruders from Sumatra. The two are as distinct in speech as they are in every other respect. Both, however, have this in common, that they have no known congeners elsewhere on the Asiatic mainland, and that their affinities are entirely with the Interoceanic races. The Samangs speak several distinct idioms, and the dialects spoken on the eastern are said to be quite different from those on the western side of the peninsula. But this points rather at long isolation than at differences of origin, and is but a fresh illustration of the weakness of the polygenist argument based on the present divergence of human speech.

Of the MINCOPIES so little was known till quite recently that Latham fancied they might somehow be connected with the Burmese. They occupy the whole of the Andaman Archipelago, and E. H. Man, who has lately visited them, mentions nine different tribes all speaking different languages. Of these there seem to be two broad divisions—a northern and a southern, so distinct that a native of a northern is as unintelligible to one of a southern island as is an English peasant to a Russian. These are therefore not merely dialects, but true languages, though no doubt of common origin. They are all agglutinating, and resemble the Dravidian and Australian tongues in their use of suffixes instead of prefixes. We are further told that there are two forms of the first person plural, probably answering to the inclusive and exclusive forms of the Mahori group, and that the ending *da* is applied to all things animate, supernatural, and abstract, other than human, a feature answering somewhat to the rational and irrational divisions of the Fulah. These remarks apply more particularly to the idioms of the Bôjingîjîda and Bôgîjîab tribes, dwelling in the south, nearest to the English settlements.[1] In the former,

[1] The other tribes and languages mentioned are—Jarawa, Yéréwa, Balawa, Awkojuwai, and Akakol.

Man has composed the Lord's Prayer, published with addenda by R. C. Temple, Calcutta, 1877.

The colour of the Andamanese is described as "not deep black, but rather sooty," and their hair is said by Colonel Fytche to grow in detached tufts. But this is an error, probably arising from the way in which it is dressed. It is now generally admitted that there is no such phenomenon as hair growing in separate tufts; when carefully examined it is always found spread uniformly over the scalp. Hence arguments of affinities between races based on this peculiarity are worthless.

Of the possible relations of all these Negrito peoples with the Akkas, Obongos, Dokos, Bushmen, and other dwarfish African negroes, or with the dark Mois of Annam, and darker Kurumbas, Ghonds, Maravars, of the Deccan, nothing need here be said beyond reminding certain transcendental anthropologists that no undoubted case of *woolly* hair has yet been found in India, and that the use of suffixes rather than prefixes, or *vice versa*, is no proof at all of linguistic affinity.[1]

III. The Papûan Races.

The present area of this race lies nearly between the equator and tropic of Capricorn, north and south, stretching east and west from Floris to Fiji. If we suppose it to be fundamentally distinct from the Negrito, as it certainly is from the Austral and brown stocks, its original domain must be sought still farther to the east, that is in the Central Pacific, which is known to be an area of subsidence. As the land disappeared the people moved still to the west, here, almost everywhere, meeting other races already in possession of the soil. These they sometimes subdued and absorbed or extirpated, but more frequently amalgamated

[1] On the other hand, the Negrito has by many anthropologists been confounded with the Papûan type. But the differences between the two are fundamental, and are thus briefly summed up by Mr. Wallace:—"They [the Negrito] are dwarfs in stature, only averaging four feet six inches to four feet eight inches high, or eight inches less than the Malays, whereas the Papûans are decidedly taller than the Malays. The nose is invariably represented as small, flattened, or turned up at the apex, whereas the most universal character of the Papûan race is to have the nose prominent and large, with the apex produced downwards, as it is invariably represented in their own rude idols. The hair of these dwarfish races agrees with that of the Papûans, but so it does with that of the negroes of Africa. The Negritos and the Samangs agree very closely in physical characteristics with each other and with the Andaman Islanders, while they differ in a marked manner from every Papûan race."—*The Malay Archipelago*, p. 590.

with them, whence the remarkable phenomenon that one of the most strikingly distinct types of mankind is now mostly found in a mixed state, blended not with one but with at least three, possibly four, other stocks.

The Papûans exist in a pure state only in the interior and western section of New Guinea, and neighbouring Aru, Waigiou, Salwatty, and a few other islands. On the north coast of Australia they are or were found mixed with the Austral stock, for Dampier and other earlier explorers speak of tribes with "curl'd hair," clearly indicating Papûan blood, about Cape York and Torres Strait.[1] In the Admiralty, New Britain, and all the archipelagoes running from New Guinea due east to Fiji inclusive, they seem everywhere to form the basis of the population, being here intermingled in various proportions apparently with the Mahori race. In the Indian Archipelago, again, from about Timor-Laut westwards to Floris, also inclusive, they are similarly blended, mainly with Malayan elements. We thus arrive at the three main divisions already referred to—Papûans proper in the centre; Malayo-Papûans in the Indian Archipelago, here grouped as Sub-Papûans, West; and Mahori-Papûans in the Pacific, here grouped us Sub-Papûans, East, as in the subjoined scheme. Doubtless the very existence of the Papûan as an independent ethnical type has recently been denied by a distinguished explorer in these regions.[2] But this paradoxical statement, utterly unsupported by any argument, can have little weight in the face of the serious studies of such profound naturalists and observers as Wallace, Flower, Broca, Topinard, and many others, who have abundantly established the fundamentally distinct features of one of the most characteristic types on the globe:—

[1] "The infusion of Papûan blood [on the north coast of Australia] may not have entirely changed the character of any tribe, *but it is there;* and it is apparent where the Papûans have never been. This affects the people of the north-east coast."—(Brough Smyth, Introduction, p. 1).

[2] Sig. L. M. D'Albertis, in a paper read before the Royal Geographical Society, November 11, 1878, on his explorations of the Fly River and other parts of New Guinea, where he says that the Papûan "has no claims to be considered ethnologically as a distinct race."

PAPÛAN STOCK.

Sub-Papûans, West.		Papûans Proper.		Sub-Papûans, East.	
Floris.	Endeh.	Indian Archipelago.	Aru.		Admiralty Islands.
	Konga.		Waigiu.		Louisiade Islands.
	Kio.		Salwatty.		New Ireland.
	Roka, etc.		Batanta.		New Britain.
Jilolo.	Sahoe.		Poppa.	S. Cruz.	Vanikora.
	Galela.		Gebi.		Tanema.
Ceram.	Teluti.		Mysol.		Tupua, etc.
	Kamarian.		Ké.	Solomon.	Guadalcanar.
	Tobo.	West N. Guinea.	Papua-Kowiyî.		Bauro ; Ulana.
	Marhunu, etc.		Doray.		Mara Ma-Siki.
	Goram ; Wetter.		Mafor.		Anudha.
	Matabello.		Amberbaki.		Mahaga.
	Amboyna.		Arfak.		*Eddystone.*
Bouro.	Cajeli.		Biak.	N. Hebrides.	Aneityum.
	Wayapo.		Karus ?		Erromango.
	Massaratty.	East N. Guinea.	Koiari.		Tana ; Mota.
	Banda ; Savu.		Koitapu.		Mallikolo.
	Timor ; Kissa.		Kulkaliga.		Api ; Pama.
			Naman.		Ambrim.
			East Cape.		Vunmarama.
				Loyalty.	Mare.
					Lifu.
				N. Caledonia.	Baladea.
					Daauru.
					Yehen.
				Fiji.	Bau.
					Mbua ; Lau.
					Narua ; Vudd.
					Kaitongaviti.

By the favour of Rev. W. G. Lawes we are here enabled to append a complete list of all the

LANGUAGES KNOWN TO BE SPOKEN ON S.E. COAST OF NEW GUINEA.

1. *Rora,* Yule island.
2. *Mou* and other villages on opposite coast.
3. *Naala,* Redscar Bay, about C. Suckling.
4. *Kapatsi,* villages on Manumanu river, Redscar Bay.
5. *Toula,* villages up a river, E. side Redscar Bay.
6. *Motu,* Port Moresby, and nine other villages.
7. *Koitapu,* inland tribe near Port Moresby.

8. *Koiari*, on hills back of Port Moresby.
9. *Manukolo*, villages E. of Port Moresby, W. of Round Head.
10. *Palavai*, district W. of Round Head.
11. *Ikolu*, villages near Round Head.
12. *Papaka*, inland from Hood Point.
13. *Kerepunu*, Hood Bay and Point.
14. *Quaibo*, villages up Hood Lagoon.
15. *Anamaropu*, on mountains back of Hood Lagoon.
16. *Kulo*, villages in Hood Bay.
17. *Aloma*, villages about Keppel Point.
18. *Dedele*, villages E. of Keppel Point.
19. Toulou island.
20. Orangerie Bay.
21. Brummer islands.
22. Teste island.
23. Heath islands.
24. Milne Bay.
25. East Cape.

On these Mr. Lawes remarks—"Those from 18 I have very little knowledge of, but I believe there are many more in that part of the coast than I have recorded. It is more likely, I think, that Nos. 4, 5, 7, 8, 10, and 11 are allied. The others are coast tribes, and all seem to belong to what has hitherto been known as 'Malayo-Polynesian.' The natives say No. 9 is quite different from either inland or coastal dialects. From one visit I paid them, and a few words which I got, I should think they are right. At East Cape again (25) quite a different language seemed to be spoken from that on either the mainland near or the islands, Heath, Moresby, etc., opposite." (Letter to writer, Jan. 20, 1879.)

From the data supplied further on (p. 616) it will be seen that Mr. Lawes is fully justified in connecting most of these tribes with the "Malayo-Polynesian" (Mahori) linguistic family, though, no doubt, most of them have absorbed Papûan blood, and are therefore ethnically to be regarded as belonging to the group here called "Sub-Papûan; East." [1]

Further particulars of these and other Papûan tribes and languages will be found in the accompanying alphabetical index. Here it will suffice to observe that all the true Papûan idioms differ profoundly both from those of the other Interoceanic families, and often also from each other. They are, in fact, as remarkable for their great divergence as the Mahori, for instance, is for its singular homogeneousness; hence they form rather a series of more or less vaguely connected groups than of linguistic families distinctly related to one another. At the same time the western

[1] Besides the tribes in Mr. Lawes' list, C. Stone mentions the *Maiva*, *Elema*, *Kulkaliga*, and *Naman*, for which see Alphabetical List. The *Elema* may possibly be the same as Mr. Lawes' *Aloma*.

branch is allied to the Malayan family through their common Malay elements, just as the eastern often is to the Mahori through their common Mahori elements. These common elements, however, will probably be found to be restricted rather to the vocabulary than to the structure of the respective groups. It is, of course, premature to speak positively on a question of this sort in the case of idioms, most of which are known only by name; but the data hitherto collected do not so far seem to contravene the abstract statement elsewhere insisted upon,[1] that, however mixed any given race may be, the mechanism of its speech is never mixed to any appreciable extent. Here one or other of the components always prevails sufficiently to establish the general principle that most races, but no languages, are mixed.

The Papûan languages are distinguished by a very remarkable peculiarity. They are all evidently agglutinating, but they employ both pre- and suffixes with equal freedom to express the various grammatical relations. Thus from *Snûn* = man, we get the plural *snûnsi* by the suffix *si;* the possessive *rosnûn* = of the man, by the prefix *ro;* and the possessive plural *rosnunsi* = of the men, by both. They otherwise differ from the Mahori, and from most Malay tongues, by a richer and perhaps harsher phonetic system; by closed monosyllables, rare in Malay, unknown in pure Mahori; by the division of nouns into two classes, one marked by the presence, the other by the absence, of a pronominal suffix—a point, however, which they have in common with the *Ebon* of the Mikronesian group; by the occasional use of numerals as plural prefixes; often by the absence or rareness of true adjectives, as in *Mota;* by *trinal,* as well as dual and plural pronouns; and, lastly, by the very general employment of temporal and modal prefixes.

IV. The Mahori Races.

Of the Interoceanic brown races these claim our first attention both on ethnical and linguistic grounds. Their relations to the two other branches of the stock, but especially to the Malayan, are peculiar, and at first sight perplexing. The present home of these large brown Polynesian islanders is mainly in the eastern Pacific. A line drawn from New Zealand through Samoa northeast to Hawaii, all inclusive, very nearly defines their present western limits. They are in exclusive possession of the whole of

[1] In the Ethnological Appendix to the forthcoming volume of this series devoted to Europe.

the watery area to the right of this line as far as Easter Island, and left of it are nowhere now found in an unmixed state, except in the Ellice and Union groups, and at a few scattered points in the New Hebrides, Loyalty, and S.E., and perhaps N.E. coast of New Guinea. They are thus entirely shut off by the intervening Papûans from the Indian Archipelago, the domain of their western or Malayan congeners, whence they are now generally believed to have migrated eastwards.

From this fact it has been too hastily assumed that they are an offshoot of the Malayan stock, and, as above noted, the unhappy expression "Malayo-Polynesian" has done much to popularise this view. But it may confidently be asserted that the reverse is rather the case; in other words, that the Malayan is rather a modification of the Mahori than the Mahori of the Malayan type.[1] The Mahori seem, on the whole, to be a pure, unmixed race, if any such are still anywhere to be found on the globe. Their language also belongs confessedly to a primitive unmixed form of speech but one degree removed from the isolating, or lowest stage, typified by the Chinese, and occupying a sort of intermediate position between it and the true agglutinating tongues typified by the Finno-Tataric family.

On the other hand, the Malayan presents itself as physically of a decidedly mixed type, mixed in all probability of Mahori, sub-Mongolian, Khmêr, and possibly other elements. Their speech also, while radically the same as, is far more developed and intermingled with foreign ingredients than, the Mahori; that is to say, it is *less primitive*, and has already passed quite over to the agglutinate state on the verge of which Mahori still hovers. The most cursory comparison of the Malagasy, High Malay, Kawi, and especially Tagalo-Bisayan, for instance, on the one hand, with the Samoan, Tahitian, and Hawaiian on the other, is abundantly sufficient to establish this point.

To say, therefore, that the unmixed Mahori proceeds from the mixed Malay is obviously absurd. Yet, on the other hand, the

[1] That the Mahori represents a more primitive stage of the common organic speech, and that it therefore does not derive from the present Malay language, was perceived over forty years ago by J. Dumont D'Urville. Commenting on the presence of Sanskrit elements in the latter, he asks: "De ce que ces expressions ne reparaissent point dans le polynésien, n'est il pas naturel de conclure que le polynésien ne dérive point du malaïo, mais bien que ces deux idiomes proviennent d'une langue plus ancienne, DONT LE POLYNESIEN OFFRE LE RAMEAU LE PLUS *pur*, tandis que le Malaïo a été grandement modifié par l'influence du sanscrit?" Had he gone beyond the Sanskrit to the *prehistoric influences* from Farther India, he might have hit upon the true solution of the question of the mutual relations of these two great stocks.

Mahoris have, as stated, almost certainly migrated from their present Malayan region eastwards to their actual Pacific domain. The explanation of this difficulty has not yet been given, indeed the difficulty has scarcely presented itself in this trenchant way. Yet we fancy it will vanish as soon as proposed if we assume the Indian Archipelago to have been originally peopled by the pure Mahori stock. One branch of the race, migrating as is thought from Bouro[1] eastwards, ultimately found its way to Samoa, thence gradually occupying all the hitherto uninhabited coral and volcanic eastern Pacific islands. In these isolated homes it would necessarily retain its racial purity, while its speech, for want of the impulse given by contact with other and higher forms, may well have been arrested in its upward tendencies towards agglutination.

Those who remained behind in the Indian Archipelago, if at that time most of it did not still actually form part of the Asiatic mainland, became exposed to constant sub-Mongolian and other invasions from the north, the result being the usual fusion of races everywhere witnessed under like conditions. Herein also probably lies the explanation of the endless varieties constituting the present Malayan stock—varieties typified by the Sumatran Battas, the Bornean Dyaks, the Orang-Benúwa of Malacca, the Javanese, Sassaks, Bugis, Tagalas, and many others.

The assumption that the Mahoris were really the autochthones of the Indian Archipelago would seem to receive fresh confirmation from the account given us of the Mantâwey islanders by Von Rosenberg in the work quoted further back. The natives of this group, which lies about 70 miles off the west coast of Sumatra, are totally distinct in physique and speech from any of the peoples of

[1] The theory, however, that Bouro was the starting point of what may be called the first Mahori dispersion, as Savaiki was of the second, rests on too flimsy grounds to be made the basis of any sound hypothesis. The Samoan tradition is that they came from a great island in the west, the abode of the blest, called *Pulotu*. The Tongan form of this word would be *Bulotu*, i.e. *Burotu* = *Buro-tu*, where *Buro* is identified with the island of Bouro, and *tu* assumed (Fr. Müller cautiously throwing in a "wahrscheinlich") to be a contraction of *tabu* = sacred, as in *Tonga-tabu*. Hence *Pulotu* = "Sacred Buro." But *pulo*, instead of travelling to Tonga in order to be re-transformed to *Bouro*, may be nothing more than the ordinary Malay word for *island*; so that, if *tu* really stands for *tabu* (Samoan *tapu*), *Pulotu* may mean simply "the sacred island," in fact the traditional "home of the blest," lying to the west, but not otherwise now to be identified with any particular island. The present Samoan word for *island* is *motu*, which meaning "severed," may simply be a substitute, after the usual Polynesian fashion, for an original *pulo*, which became "tabooed" in virtue of this very tradition. Fortunately, however, the supposition that the Mahori migration was eastwards rests on more solid arguments than such strained etymologies as these.

the adjacent islands and mainland; and in a remarkable passage at p. 289 of part i., the writer describes them as strikingly like the "Polynesians," *i.e.* the Mahoris.[1] Their language also would appear to be of a distinctly Mahori type, for he represents it as of a very primitive character, but little developed, and full of vowels, a description entirely applicable to all the eastern Polynesian dialects. But the presence of a Mahori people, if such they be, on this extreme western verge of the Malayan domain, cannot be accounted for by assuming a more recent migration across all the vast and often densely peopled Papûan and Malayan regions, from Samoa westwards, to and beyond Sumatra. Hence, the inevitable conclusion that these Mantâweys are here autochthonous, possibly the only remnant of the western Mahoris that has escaped contact and fusion with the intruding sub-Mongolian and other Asiatic races. In short, the Mahoris went eastwards while the common speech was still everywhere in its present primitive state, and before, or possibly even in consequence of, the eruptions from the north—eruptions modifying in the west the type which preserved its purity under exceptional circumstances in the east.

Here the Mahoris arrived first at the Samoan Archipelago, which point they must have reached before the western branch was affected by Indian influences, for there are no Sanskrit elements in their speech. As the introduction of Hindu culture into the Malay Archipelago is coincident with the spread of Buddhism about the time of the Christian era, the separation must have taken place at least before that time. But in point of fact it occurred at a far more remote period, for the Kawi, one of the earliest languages to be so affected, had already been developed to the agglutinating state, and a thousand years would probably be needed for such a growth. We may therefore fix 1000 B.C. as the latest date at which the Mahoris make their appearance in Samoa. From this centre, and more particularly from the island of Savaii, the principal of the group, their farther migrations can be traced with some certainty from archipelago to archipelago through the uniform traditions of the various groups. In these traditions Savaii is constantly referred to under diverse forms as the original home of the race, or otherwise persists, as shown in the subjoined list, which will also serve to illustrate the permutation of letters in all these closely connected dialects:—

[1] "Er trägt so ganz und gar das Gepräge eines polynesischen Stammes dass man ihn weit eher mit einem Bewohner der Südsee-Inseln vergleichen möchte."

SAVAIKI—Organic Mahori form of the word.

SAVAII—The Samoan form ; here still the name of the island referred to in the Mahori traditions.

HAVAH—The Tahitian form ; here "the universe," "the world" in the national odes ; also the old capital of Raiatea island.

AVAIKI—The Rarotonga form ; here "the land under the wind."

HAWAIKI—The Maori form ; here the land whence came the first inhabitants of New Zealand.

HAVAIKI—The Marquesas form ; here "The lower regions of the dead." Over the victims in human sacrifices are uttered the words, "To fenua Havaiki" = Return to the land of thy forefathers.

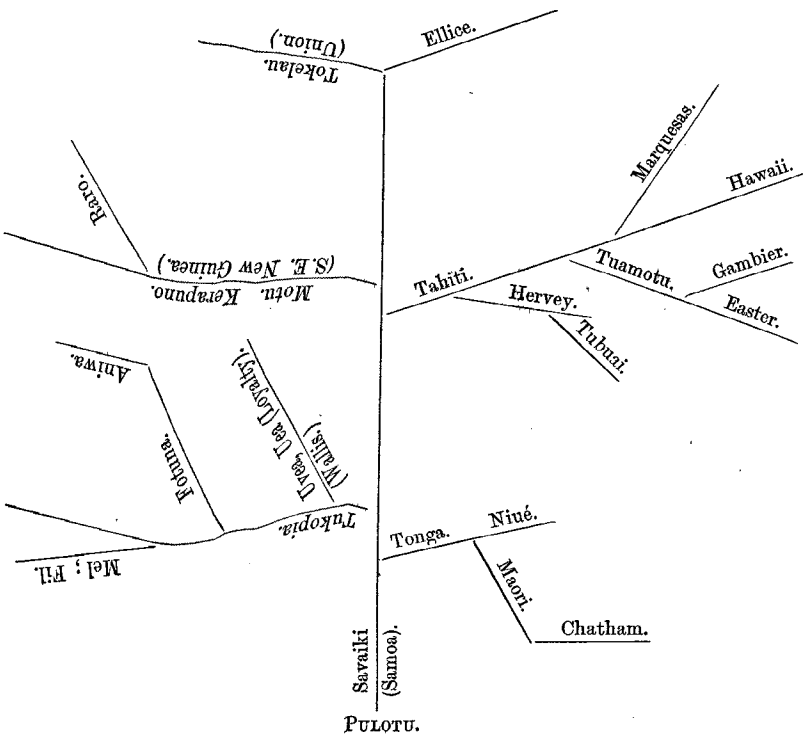
HAWAII—The Sandwich form ; here still the chief island of the group.

HEAVAI—The form in chart published by R. Foster in vol. v. of Cook's Second Voyage, and based on information furnished by Tapaia, a native of Tahiti, who had no personal knowledge of Samoa.

HEAWIJE—The form given by Cook in his account of his first visit to New Zealand (1770).

Of course it is not implied that each people came directly from Savaiki, but only that the several migrations took place at times when the name of their primeval home was still fresh in the memory of all, or at least still survived in some mythical form. That this home was really Savaii rather than, for instance, the Tahitan Havaii, or the Sandwich Hawaii, is determined in favour of Samoa, besides other considerations, by the presence of the letter *s*, which is organic, and which is elsewhere permuted mostly to *h*. But beyond the fact that all come either directly or indirectly from Samoa, nothing very positive can be stated regarding their mutual relations and genealogies. The subjoined scheme, partly suggested by Rev. S. J. Whitmee, comes as near to the truth as is perhaps now possible :—

GENEALOGICAL TREE OF THE MAHORI RACES AND LANGUAGES.



A new branch represented by the Motu, Kerapuno, Elema, and several other dialects (see list at p. 608) is here introduced in consequence of the recent results of exploration and missionary work on the south-east coast of New Guinea. Many of these tribes, though probably of mixed Mahori and Papûan blood, seem to speak pure Mahori languages,[1] as may be seen from the following brief specimen from Rev. W. Y. Turner's paper on the Motu people in the *Journal of the Anthropological Institute* for May 1878:—

English.	*Motu.*	*Mahori.*	*Malay.*
Bird	manu	manu	manu.
Cocoanut	niu	niu	niju.
Come	mai	mai	mai.
Eye	mata	mata	mata.
Fruit	huahua	fua	bua.
Hand	ima	lima	lima.
Road	tara	ala	dala.
Woman	haine	fafine	bawine.
Water	vai	vai	wai.

A comparison of the two words for *fruit* and *woman* with the Malay would seem to imply that these languages are Mahori rather than Malay dialects, for the change of *f* to *h* (*fua* to *huahua*, etc.) is normal, and occurs regularly, for instance between the north-east and south-east Marquesas dialects, whereas the change of *b* to *h* (*bua* to *huahua*) is unknown. The same conclusion is deduced from the structure of these New Guinea idioms, which is extremely simple and on the same level of development as the Mahori.

Many of the peculiarities of this linguistic family have already been incidentally noticed, and may here be briefly resumed. Amongst the most striking are—1. Their limited phonetic system, consisting of fifteen letters only, five vowels and ten consonants; 2. The absence of *s* in all except Samoan and its direct offshoots Tokelau and Ellice; 3. The great predominance of vowels over consonants, no two consonants ever combining, and no word or syllable ever ending with a consonant, and hence the remark that these are languages "without a backbone;" 4. Their wonderful homogeneity, far exceeding that of the Semitic and all other linguistic families; 5. The almost total absence of inflexion, rela-

[1] Mr. Lawes has remarked on the increasing resemblance of the coast languages to the Mahori type as we advance from Port Moresby along the south-eastern seaboard of New Guinea towards East Cape. At this point, however, we meet the sub-Papûan races, and all further affinity ceases.

tions being expressed by *separate particles* preceding and following the unmodified root; 6. Their imperfect differentiation of the parts of speech; 7. The curious practice of "tabooing" words, such as those forming part of a chief's name, either during his lifetime or after his death; 8. Unaccountable and apparently capricious interchange of consonants, such as the universal substitution of *k* for *t* (*kama* for *tama*, etc.) now actually going on in the Samoan group. They agree with the Malayan family chiefly in the possession of a common stock of roots and of certain relational elements. The essential difference between the two consists in their different degrees of development, the Mahori occupying an intermediate position between the isolating and agglutinating, the Malayan having already fully reached the agglutinating state. It is also to be noticed that the literary Mahori, which has grown up of late years, does not always convey a clear idea of its primitive simplicity. The translators of the Bible and other works, partly through necessity, partly through ignorance of its real genius, have introduced a number of neologisms, phrases, idioms, and even grammatical forms, resulting in a new language now currently spoken, especially in Tahiti, which Jules Garnier describes as "si différente de l'ancienne que les vieillards peuvent s'entretenir dans le language de leur jeunesse sans que leurs fils les comprennent."—*Océanie*, p. 332. Under such influences it is easy to understand how rapidly Mahori might develop into a perfectly agglutinating tongue.

V. The Mikronesian Races.

These occupy a comparatively limited area, lying almost entirely between the equator and 20° N. latitude, and stretching from about 180° E. or W. longitude westwards nearly to the Philippine Archipelago. They are otherwise the least interesting of all the Interoceanic races, presenting no distinct type and being probably one of the most hybrid races on the globe. The main elements are doubtless the Malayan and Mahori; but there is evidently a Negrito and possibly in some parts a Papûan substratum, with a later Chinese and Japanese infusion due to the junks frequently cast ashore, especially on the western islands. The aborigines of the Ladrone or north-western group were extirpated by the Spaniards during the course of the last century, and these islands have since been repeopled, mainly from the Philippines, so that there is here an additional Tagalo-Bisayan element.

Like the people, the languages are also mixed, at least in their vocabulary. Their grammatical structure is on the whole the same

as that of the Mahori, but the sounds of *j*, *ch*, *sh*, etc., point at Malayan influences on their phonetic system, while the frequency of closed syllables and the somewhat harsh combinations of consonants may perhaps be traced to the dark races by whom these islands seem to have been originally peopled. The points which they have in common with the Mahori are chiefly the accent falling as a rule on the penultimate; the article *te* used (in the Kingsmill islands) both in a definite and indefinite sense; the use of prepositions to indicate nominal relations; slight differentiation of the parts of speech, many words being freely used indifferently as nouns, adjectives, or verbs, without any modification of form; dual pronouns; conjugation by separate particles, except in the Ebon (Marshall group), in which there are distinct temporal inflexions; frequent use of causatives and verbal directive particles; the custom of tabooing words. In the Pelew islands there is also a polite language as in Java.

Excluding the Ladrones, for the reason above stated, the main divisions, with their best known dialects, are as under:—

Pelaw and W. Carolines.	E. Carolines.	Marshall.	Gilbert.
Tobi	Satawal	Ebon	Tarawa
Yap	Ponape	Mille	Kuria
Babelthuap	Tuker	Ebnor	Apamana
Uruktapel	Puinipet		Arorae
Satahuan ?	Ulea		
	Lamurek		
	Enderby		
	Lugunor		
	Ualan		

A little south-east of Gilbert is the Phœnix Archipelago, not usually included in this group, and apparently occupying an intermediate position between the Mikronesian and the Mahori. The natives are of a dark brown complexion, with wavy and even frizzly hair, betraying the presence of Papûan blood, which is even found in Penrhyn, still farther to the east.

VI. The Malayan Races.

The relation in which the Malayan stands to the Mahori stock has already been discussed. Its peculiarly mixed character is strikingly illustrated by the extraordinary number of distinct physical and linguistic elements in this group. In the accounts of

all naturalists and explorers we constantly meet with comments on the great variety of types everywhere presented by the natives of the Indian Archipelago. This is particularly true of their languages, which are almost uniformly represented as possessing, besides a common Malayan, at least one and often two other elements; and this is the case not only with those in Floris, Ceram, Jilolo, and other eastern islands evidently made up of Malayan and Papûan ingredients, and therefore above classed with the sub-Papûan West, but also with the western Sundas, Javanese, Bali, Sassak, and most of the Sumatra tongues. Some of these foreign elements are easily traced to Indian and Arabian sources, introduced with the spread first of the Hindu and then of the Mohammedan religion. Thus the old Kawi of Java and the Balinese are largely affected by Sanskrit, the Atyeh of Sumatra by Arabic elements. But others go much further back, and seem to be due to the prehistoric inroads from the Asiatic mainland, which have everywhere so profoundly modified the original western Mahori type in these regions. The result is a far greater diversity of speech than is perhaps to be found in any other distinct linguistic family; and the languages of two neighbouring islands—such, for instance, as Nassau and Nias—often present greater divergencies than will be found in almost any two given Aryan tongues.

In its widest extent the area of the Malayan language and its direct offshoots extends from Madagascar across the Indian Ocean north-eastwards to the island of Formosa on the Chinese seaboard. It includes the peninsula of Malacca as far north as the isthmus of Krah, about 10° N. lat., but excludes all the eastern islands comprised in the western branch of the Papûan group dealt with in Section III. of General Scheme, besides the Negrito element of the Philippines, Malacca, and Andaman. The grouping of this widespread and heterogeneous family presents so many and such formidable difficulties that no thoroughly satisfactory scheme is possible. The subjoined has at least the advantage of giving a comprehensive view of all its recognised divisions without pretending to determine the mutual relations in which these may otherwise stand to each other :—

GENERAL SCHEME OF THE MALAYAN RACES AND LANGUAGES.

MALAYAN PROPER.

Orang-Malâyu.
- High Malay.
- Menangkabu.
- Palembang.
- Banjermassin.
- Bornean Seaboard.
- Billiton.
- Bangka.
- Penang.
- Singapore.
- Malacca States.

Orang-Laut.

Orang-Benûwa.
- Yakun. — Malacca.
- Udai. — Malacca.
- Sakai. — Malacca.
- Bâsisi. — Malacca.
- Sabimba. — Malacca.
- Mintira. — Malacca.
- Pungau. — Malacca.
- Salatar. — Malacca.
- Anambas. — Malacca.
- Abung. — Sumatra.
- Kubu. — Sumatra.
- Lubu, etc. — Sumatra.

SUB-MALAYAN WEST.

Sumatra.
- Atyeh (Atchin).
- Batta.
  - Toba.
  - Ankola.
  - Dairi.
  - Pakpak.
- Singkal.
- Simpang-Kanan.
- Simpang-Kirie, etc.
- Rejang.
- Sarawi.
- Lampung.

Islands W. Coast Sumatra.
- Maruwe.
- Nias.
- Batu.
- Banyak.
- Engano
- Nassau ?

W. Sundas.
- Kawi.
- Javanese.
- Sundanese.

B. Bengal.
- Nicobar.
- Mergui.
- Shom-Baeng ?

SUB-MALAYAN EAST.

Central Sundas.
- Balinese.
- Madurese.
- Sumanap.
- Sassak.

Sumbawa.
- Bima.
- Dompo.
- Tombara.
- Tangar.
- Papekat.

S. Celebes.
- Bugis.
- Waju.
- Boeton.
- Moena.
- Mankassara.
- Mandar.

Borneo.
- Dyaks :—
  - Kayan.
  - Madang.
  - Petak.
  - Balow.
  - Katingar.
  - Meri.
  - Kiao.
  - Bisaya.
  - Kohom, etc.

N.-EASTERN BRANCH.

Philippines.
- Tagalog.
- Bisaya.
- Bicol ; Ilocano.
- Pampango.
- Igorrote.
- Ibalaos ; Suflin.
- Pangasinan.
- Ibanag ; Hanes.
- Idayan ; Gaddan.
- Dadaya.
- Apayao.
- Malaneg.
- Tinguian.
- Ibilao ; Ifugao.
- Ilongote ; Zambal.
- Zebuan ; Manobo.
- Mandaya.
- Coyuvo.
- Calamiano.
- Panayano.
- Illanun.

Sulu.

Palawan.

Formosa.
- Yukan.
- Pepukhwan.
- Sideia.
- Jakeh.
- Tilloi.
- Favorlong.

S.-WESTERN BRANCH.

Madagascar.
- Malagasy :—
  - Hova.
  - Betsileo.
  - Ibâra.
  - Betsimisaraca.
  - Sihanaka.
  - Tanala.
  - Tankay.
  - Ikongo.
  - Sakalava.
  - Behisotra.
  - Isamahety.
  - Tandrona.
  - Antankara.

Here there is little beyond mere dialectic variety in the first column. The *Bahâsa Malâyu* (بهس ملايو), or Malay language proper, where current in the Archipelago, is everywhere spoken with remarkable uniformity, and even the ruder dialects of the uncivilised tribes in Malacca and Sumatra do not differ essentially from the literary or High Malay. The so-called "Low Malay" of Batavia is not a distinct variety at all, but only a broken or conventional *lingua franca* serving as the common medium of intercourse between the natives and Europeans, and resembling the kind of ungrammatical Hindustani current in Anglo-Indian households. The Batavian proper is rather a mixed Sundanese than a Malay language. Malay proper is vernacular in Malacca, a large portion of Sumatra, in the islands of Billiton, Bangka, Panjor, Penang, Singapore, Rhio-Lingga, Banda, in parts of the Moluccas and Timor, and generally round the coast of Borneo. In structure it is much simpler than any of its congeners, and thus forms the direct connecting link between them and the Mahori group. Its primeval home cannot now be determined, though the traditions point rather at Palembang and Menangkabu, in Sumatra, than the peninsula of Malacca. Of the Malay nation there are three broad divisions, or rather social and class distinctions, as under :—

1. *Orang-Malâyu*, the Malays proper, understood to refer to the semi-civilized and settled communities in Sumatra, Malacca, Borneo, etc., all of whom are Mohammedans, speaking High Malay, and with a literature written in the Arabic characters.
2. *Orang-Laut*, "men of the sea," the "sea gipsies" of English writers, living mainly on the water, engaged almost exclusively in fishing, and from time immemorial addicted to piracy : "*cujo officio he rubar e pescar.*" (De Barros, quoted by Crawfurd.) They are the *Bajaus* of Celebes, and very probably akin to the Illanos of Mindanao and the Lanuns of Borneo.
3. *Orang-Benûwa*, "men of the soil," known also as *Orang-Utan*, "wild men ;" *Orang-Gunung*, "Highlanders ;" *Orang-Darat*, "Landsmen," etc. ; the savage and unlettered wild tribes of the interior of Malacca, parts of Sumatra, Rhio-Lingga, and other islands in Malacca Straits. All speak rude but pure Malay dialects, and are divided into a great number of tribes, known generally by the names of the districts and the rivers occupied by them. Notwithstanding their collective designation of Orang-Benûwa, we have seen that they cannot be regarded as the true autochthones of Malacca.

The peoples here grouped as *sub-Malayan* differ from the true Malays both in speech and physique. Their languages possess, besides a common Malay, many other elements, which can no longer be traced to their origin, and on which it would be useless to speculate. Many anthropologists recognise with Junghuhn two distinct brown types, the true Malay and the pre-Malay, in the Indian Archipelago. According to this view, to the first would belong the Malays, Rejangs, Atyehs (Atchinese), Javanese, Sundanese, Madurese, and Philippine Islanders; to the second, the Battaks, Passumahs, Lampongs, and the natives of Nias, Batu, Sumba, Rotti, Dau, Savu, Samau, Allor, Pantar, Lombem, Adoner, Solor, Bali, South Celebes, and Moluccas. The pre-Malayans are represented as a taller and more muscular race than the others, with less prominent cheek-bones, a lighter shade of brown, with a ruddy tinge on the cheeks, beard more developed, and hair of finer texture and more inclined to a brown colour. For this race Logan's term *Indonesian* has recently been revived by Dr. Hamy, who regards the pre-Malay population as "fort voisines des Polynésiens [Mahori] proprement dits" (*Bul. de la Soc. de Géographie*, xiii. 1877, p. 491); and there can be no doubt that most of the features above specified are characteristic of the Mahoris. But this is merely a fresh confirmation of the theory here advocated that Malaysia was originally peopled by the Mahori race, which afterwards became modified in various proportions by fusion with intruding peoples from the north. Hence there can be nothing surprising in the fact that some of these mixed western races should continue still to show greater resemblance to the unmixed eastern branch than others. It is simply a question of greater or less fusion with foreign elements, all alike being primarily of one stock. Hence neither the expression *Indonesian* nor the theory involved in it can here be accepted.

To mark the differences in question a better term seems to be *sub-Malay*, which recognises both the physical and linguistic differences, and the original unity of the races in question. Hence by sub-Malayan will be understood everything in the archipelago that is neither distinctly Malay nor sub-Papûan West.

But this expression cannot be so conveniently extended to the Tagalo-Bisayan, Formosan, and Malagasy; because in these extreme north-eastern and south-western divisions we are dealing with a different phenomenon. Here we have, not a fusion of an original Mahori stock with various sub-Mongolian and other Asiatic peoples, resulting in the present Malay and sub-Malayan races of the archipelago, but a later spread of the Malay race itself east and west to the Philippines, Formosa, and Madagascar, and

there partly absorbing local elements. The distinction is important, and necessary to the understanding of the curious fact that the Malay language presents in some respects closer affinities to the distant Malagasy and Formosan than it does to some spoken in the very heart of the archipelago, as for instance the Mangkassara and Bugis of South Celebes. Mangkassara and Bugis are the outcome of prehistoric amalgamations of Mahori and Asiatic races; Malagasy and Formosan are the result of the comparatively recent spread of the Malay language to those remote Asiatic and African islands.

The languages of the Philippine Archipelago are so numerous and so irregularly distributed, that it may be convenient here to tabulate them according to the islands and provinces in which they are current. The list includes the twenty-six officially recognised languages only, data still failing for the classification of the numerous idioms spoken by the Tagalo-Bisayan and Negrito wild tribes—

Language.	*Where spoken.*
Tagala	Island *Luzon;* provinces Bataan, Bulacan, Camarines, N. Cavite, Isabela, Laguna, Manila, Morong, Nueva Ecija, Principe, Tayábas, Zambales. Island *Mindoro* exclusively.
Bisayan	Islands Panay, Bocol, Cebu, Leyte, Ticao, Romblon, and Samar exclusively; also in parts of islands Mindanao and Negros.
Bicol	Luzon; provinces Albay, Camarine, N. and S. Tayábas; also in island Burias exclusively, and in parts of islands Masbate, Ticao, Catanduanes.
Ilocano	Luzon; provinces Abra, Benguet, Cagayan, Ilocos, N. and S. Lepanto, Nueva Ecija, Pampanga, Pangasinan, Principe, Union, Zambales.
Pampango	Luzon; provinces Bataan, Nueva Ecija, Pampanga, Porac, Zambales.
Igorrote	Luzon; provinces Benguet, Bonboc, Lepanta, Tiagan.
Pangasinan.	Luzon; provinces Benguet, N. Ecija, Pangasinan, Zambales.
Suflin	Luzon; province Bontoc.
Itanes	Luzon; province Cagayan.
Ibanag	Luzon; provinces Cagayan and Isabela. Islands Batanes (Bushee).
Idayan	Luzon; province Cagayan.
Gaddan	Luzon; provinces Cagayan, Isabela, Nueva Vizcaya, Saltan.
Dadaya	Luzon; province Cagayan.
Apayao	,, ,, ,,
Malaneg	,, ,, ,,
Tinguinan.	Luzon; province Ilocos N.

Language.	*Where spoken.*
Ibilao, Ifugao	Luzon ; province Nueva Vizcaya.
Ilongote	Luzon ; provinces Nueva Vizcaya, Principe.
Zambal	Luzon ; province Zambal.
Cebuano	Island Negros.
Manobo	Island Mindanao ; Cotabatu district.
Mandaya	Mindanao ; Zamboanga district.
Coyuvo	Islands Calamianes.
Agutaino	,, ,,
Panayano	Island Negros.

It thus appears that all are spoken almost exclusively in Luzon except these seven :—Bisayan, Cebuano, Panayano, Manobo, Coyuvo, Mandaya, and Agutaino. Bisayan is the most widely diffused, but Tagala, or better, Tagalog, is probably spoken by the greatest number. These are by far the most highly developed of all the Malayan languages, and may be regarded as occupying an intermediate position between the agglutinating and inflecting states.

Many of the sub-Malayan and Tagalo-Bisayan languages have long been reduced to writing, and the Battak people have the distinction of being the only known lettered cannibals. They are even credited with the invention of an alphabet ; but this is a mistake, all the Malayan writing systems being ultimately based on the archaic Devanâgari of the Asoka inscriptions, though now departing greatly from that type in their form. There are altogether eleven distinct systems, of which seven are still current—four in Sumatra ; one in Java, common also to Bali, Lombok, and Palembang ; one in Celebes, common to Bugis, Mangkassar, and all the cultivated languages of that island ; and one in Luzon for the Tagala. Of the four obsolete, one was peculiar to the Sundanese, one to Celebes, one to Sumbawa, and one to the Bisayas of the Philippines. In connection with this subject it is curious to learn from Mr. Park Harrison that the Motu people of south-east coast New Guinea (see p. 616) use for tattoo marks letters said to resemble those of the Indian Asoka inscriptions, and disposed in the same order as in the Rejang and Lampong alphabets of Sumatra. They have of course no knowledge of the value of these signs, which for them are mere charms or ornaments taken probably from some MS. left behind by Sumatran traders or pirates on the coast. In the same way we are told that they are fond of transferring to their bodies the patterns on the English chintzes brought here by the traders from Australia.

The subjoined comparative table of the five first numerals in forty-eight Interoceanic languages may serve to illustrate the various relations existing between them. They are restricted to five, because that is the limit of Australian numeration.[1] It will be noticed that the word for *five* is spread over the whole area, from Hawaii to Madagascar—lima, rima, nima, dima, dimi, etc. The interchange of the liquid and dental is by no means rare, and occurs often enough even within the Aryan family, as in Greek, δακρυ, Gothic *tagr*, and English *tear*, answering to Latin *lacryma*, French *larme*. The original meaning of this word was *hand*, representing the five digits, a meaning still retained in the Mahori, as in Samoan *lima* = hand and five. But the primitive sense is lost in the Malayan branch, where the word *tangan* (Malay and Javanese), *tahan*, *tanghan* (Malagasy), etc., takes the place of *lima*, *hand*. Here we have a fresh and striking proof that Mahori comes far nearer to the organic Indo-Pacific speech than does the Malayan branch; and that the elements common to both are not due, as Crawfurd supposed, to the spread of Malayan influences in the South Pacific Ocean. They are the common primeval inheritance preserved on the whole more faithfully in the east than in the west.

[1] At least this is the generally received opinion; yet D'Urville quotes from Gaimard the names of all the units besides those for 10 and 20 peculiar to the natives of Gulf St. Vincent. But, as he remarks, the list is evidently defective, and cannot be at all relied upon. The same word is given for 6 and 9 (*paltann*), and another for 7 and 20 (kutcho, kuatcho), words which probably mean nothing more than *many*, *multitude*, etc. (*Voyage de l'Astrolabe*, p. 8). On the other hand, some tribes seem to be able to express some of the higher round numbers by particular expedients. Thus the Lake Condah (Victoria) people say *bolita murung*, *i.e.* "two hands" for *ten* (Brough Smyth, ii. 117). Elsewhere he remarks that the hands and fingers are often used "to convey the idea of numbers exceeding those in their vocabulary. A native will hold up his hand, spread out his fingers, and open and shut them rapidly, when he wishes to give a notion of the great numbers of kangaroos he has seen."—ii. 4.

COMPARATIVE TABLE OF INTEROCEANIC NUMERALS.

	Language.	1	2	3	4	5
Tasmanian.	Oyster Bay	marrawah	pia wah	..	pagunta	
	S. Coast	marrawa	pûalih	..	wullyawa	
	Port Dalrymple	pammere	kutebueve	..	..	karde
Australian.	Perth	gain	gudjal	warring	bula (many)	bula (many)
	New Norcia	chegu	guggial	mau		
	K. George Sound	ken	kajen	taan	arr	pûl
	St. Vincent G.	mangûit	pollaï	..	araish	arai?
	L. Condah (Victoria)	ki-upa	bolita	bala mea		
	Bakondate (W. Victoria)	kiab	bûlicht	cartore	bûlite be bûlite	kiamonga
	Kulkyne (Murray R.)	kiab	buled	buled ya kiab	buled buled	buled buled kiab
	Port Jervis	metann	pûlar	kalarba	talkun	brebra
	Yarra, W.	kûptûn	bollowîn	bûllowîn	bagûp	
	Kurm-me-lak (L. Hindmarsh)	ke-yap	pullet	pullet ke-yap	pullet pullet	pullet pullet ke-yap
Sub-Papûan East.	Fiji	dûa	rûa	tulu	va	lima
	Vanikoro	tilu	taru	telu	tava	teli
	Tanema	kero	lalu	raru	rava	teri
	Taneau	iûne	tilu	teve	teva	tili
	Tupua	tûo	buïu	bogo	mabeo	kaveri
	Fenua Galaya	chîka	iû	toö	jiva	jini
	Indeni	teja	ali	adi	abûai	narûne
	Ponofono	ningin	lelu	eve	ûve	idi
	Mami	taï	lûa	tolu	fa	lima
	Port Carteret (N. Ireland)	tik	ru	tûl	hat	lim

	Language.	1	2	3	4	5
Papûan and Sub-Papûan West.	Samoan	e tasi	e lua	e tolu	e fa	e lima
	Tongan	taha	'ua	tolu	fa	nima
	Tahitian	tahi	rua	toru	haa	rima
	Hawaiian	kahi	rua	toru	haa	rima
	Tikopia	tassa	rûa	toru	fa	lima
	Maori	tahi	dûa	todu	wa	dima
	Ualam	sha	lo	tol	een	lam
	Satawal	iot	ru	iol	fel, fau	lim, nib
	Guaham	asha	ûgûa	tulu	fadfad	lima
	Malay	sa, sátu	dûa	tiga	ampat	lima
	Javanese	sa	loro	talu	papat	lima
	Malagasy	rek	rua	telu	efat	dimi, liba
	Boeton	saangu	ruano	taruano	patánu	limánu
	Formosan	..	rana	toro	hpat	rima
	Dorey	ocer	sûrû	kior	fiak	rim
	Wahai	sali	lua	tolo	ati	nima
	Waigiu	sai ossa	serû	kioro	tiak	rim
	Galela	moi	sinuto	sângi	iha	matóha
	Gebi	sa	lû	tûl	fat	lim
	Mysol	katim	lu	tel	faht	lima
	Menado	essa	rûa	talu	apat	lima
	Aru	ètu	ruep	lasi	kai	lima
	Nufôr	sai	suru	kior	fiak	rim
	Andaï	uëm	yâr	kâr	târ	mesvai
	Hattam	ngôm	nyana	ningâi	betai	muhing

ALPHABETICAL LIST

OF

THE INTEROCEANIC RACES AND LANGUAGES.

ACHINESE . .	See Atyeh.
Adane . . (	I. Wild tribes, Luzon, province Ilocos, Caraballos
Adang . .)	mountains; Tagala stock with distinct speech; other forms are Adangino, Adangta, Adanite. II. Dyak dialect, N. Borneo.
Admiralty . .	Islands, N. coast New Guinea; sub-Papûan stock and speech. Known only from the numerals and a few words given by H. N. Moseley in *Jour. Anthrop. In.* for May 1877.
Aëtas, Aïtas, Itas .	The aboriginal Negrito race, Philippine Islands; found in Luzon, Negros, Panay, Mindoro, Mindanao, and probably Palawan, and numbering about 25,000. Aëta is a Tagala word meaning "black."
Agutaino-Calamiano .	Tribe Philippines; Calamianes Islands; speech distinct.
Ahtiago . . .	Dialect, S. coast Ceram (Wallace).
Aiawong . . .	Australian tribe; W. coast.
Aitutaki . . .	See Hervey.
Akakol . . .	Mincopie tribe, Middle Andaman Island, E. coast.
Alafora . . .	See Alfuro.
Alaguetes . . .	Wild tribe, Luzon; province Pangasinan.
Alfuro . . .	A term applied by the Dutch and Malays to the non-Mohammedan and uncivilised peoples of Jilolo, Ceram, the Moluccas, Flores, Timor, N. Celebes, Omby, Bouro, etc. Has no ethnical significance, and is of uncertain origin, but generally derived from the Arabic Alforia = independent, free. Other forms are Alfoer, Arfur, Alafora, Harafor. See p. 595.
Allor . . .	Island between Flores and Timor; sub-Papûan type; speech distinct.
Almahera . . .	Properly the N. peninsula Jilolo, now applied to the whole island. See Jilolo.
Aloma . . .	Tribe, S.E. New Guinea, about Keppel Point; speech distinct; Mahori stock?
Amambas . .	Islands, 130 m. E. from Malacca Straits, 3° N. lat.; natives mostly Orang-Laut.
Amberbaki . .	See Mafors.
Amblau . . .	Island; see Bouru; speech distinct; sub-Papûan?

Amboyna	Sub-Malay stock; several distinct idioms, of which chief are :—Saparûa, Haroukou, Nousalaut, Hila, and Negori-Ampat; now being superseded by Malay (Van Hoevell in Fourth Series, vol. i., *Bydragen Philol. Geo. and Ethno. Institute of Dutch East Indies:* Hague, 1877). Wallace mentions the Liang on N. coast; Morella and Mamalla on N.W. coast; Batu-Merah at town Amboyna; Lariki, Asilulu, and Wakasiho on W. coast, originally from Ternate; regards the natives as a mixture of Malays, Ceramese, Chinese, Portuguese, and Dutch (p. 300).
Ambrym	See N. Hebrides.
Anamaropu	Tribe, S.E. New Guinea; see p. 609.
Andaman	See Mincopie.
Aneityum, Annatom	Island, New Hebrides; distinct sub-Papûan speech (V. der Gabelentz, vol. i.)
Aniwa	Island, New Hebrides; here is a Mahori colony speaking a Mahori dialect.
Ankola	See Batta.
Annatom	See Aneityum.
Antankara	See Sakalava.
Anuda, Cherry	Island, E. from Santa Cruz group; Mahori stock and speech.
Anudha, Florida	See Solomon Islands.
Apayao, Apayo	Wild tribe, Luzon, in mountainous provinces Cagayan and Ilocos; Tagala stock; distinct speech.
Arfak	Hill tribes, N.W. N. Guinea, about Dorey, Geelvink Bay; Papûan stock; akin to the Mafors and Biak islanders.
Arorae	Island, Gilbert group; speech wrongly said to be mixed Samoan and Hawaii; is Mikronesian.
Aru, Arru	Islands near S.W. coast Guinea; natives generally considered of true Papûan stock; speech distinct; several dialects, Wamma, Wokan, Ougia, Wanumbae. But Von Rosenberg regards them as sub-Papûan, "intermediate between the Malayan and Papûan races," (ii. 336).
Asahan	Sumatra tribe, half-caste Malays and Battas.
Asilulu	See Amboyna.
Atafu	Duke of York's Island, Tokelau gr.; Mahori stock; speech a Samoan dialect, now nearly superseded by pure Samoan.
Atchîn	See Atyeh.
Atiu	Island. See Hervey.
Atyeh	Vulg. *Achîn, Atcheen,* through the Portuguese form *Achine;* sub-Malayan stock, N. end Sumatra (and Hog Island ?); speech mixed with Sanskrit, Dravidian, and Arabic elements, and written with the Arabic character. Dr. Van Leent says they are Malays with Indian blood, presenting affinities with the natives of Malabar and Coromandel coasts.
Austral	I. The collective name here adopted for the dark Australian and Tasmanian races; see p. 594. II. Islands E. from Tahiti; native name Tubuai; speech akin to Tahitian.

Awaiya . . .	Dialect S. coast Ceram; natives "of Polynesian type" (Wallace, p. 604).
Awkojuwai . .	Mincopie tribe; middle Andaman island, W. coast.
BABA . . .	Island, Serwatty gr., E. from Timor; speech distinct.
Bajau . . } Wajau . . }	Properly the Orang-Laut of Celebes; perhaps from the Javanese Bajag = pirate, rover; speech mixed with Chinese and Japanese elements.
Bak-on-date . .	Australian tribe, Wickliffe, W. Victoria.
Baladea . . .	Large tribe, New Caledonia; sub-Papûan East.
Balawa . . .	Mincopie tribe, N. Andaman.
Balinese . . .	Sub-Malayan. Of 1000 words 479 are common to Javanese and Malay, rest local and Sanskritic. Three varieties, the old or theological, the polite, and the vulgar; spoken exclusively in Bali and round coast adjacent island Lombok; is written with the Javanese character.
Balow . . .	Dyak tribe, Borneo; Simunjon river, Sarawak (Wallace, p. 61).
Banca, Bangka . .	Island, E. coast Sumatra; natives of Malay stock called "Orang-Gunung," *i.e.* "Highlanders;" speech a rude Malay dialect closely akin to that of the Malacca wild tribes. People now much mixed with Chinese, Javanese, and other elements.
Banda . . .	Islands, S. from Ceram; aborigines, probably Papûans, have disappeared; some still survive in the Key islands, whither they migrated when the Dutch occupied Banda in 17th century. Present inhabitants a hybrid race mixed of Malay, Papûan, Arab, Portuguese, and Dutch elements.
Bando Patchaditti .	(Lake Lipson) Australian tribe, Cooper's Creek.
Bangka . . .	See Banca.
Banjermassin . .	Malay nation; S.E. Borneo.
Bankneit . . .	Australian tribe, W. Victoria.
Bantam . . .	Sundanese dialect; W. Java.
Bantek . . .	Sub-Malayan tribe close to Menado, N. Celebes; speech distinct (Wallace, p. 256).
Banûwa . . } Benûwa . . }	See Orang-Banûwa.
Banyak . . .	Islands off W. coast Sumatra, 2° N. lat.; natives originally from Nias island and Sumatra; the two types still sharply distinguished; speech peculiar "im Lauf der Zeit entstanden" (Von Rosenberg, i. 122). Nias, Atyeh, and Malay also spoken.
Baraba-baraba . .	S.E. Australian tribe; River Murray, between Echuca and Darling Junction.
Barnawartha . .	S.E. Australian tribe; Upper Murray and Indigo Creek.
Barrath . . .	Australian tribe, W. Victoria, Sherbrooke Creek.
Basa-Kuring . .	*i.e.* "Serf-language," the Low Sundanese; W. Java.
Basa-Menak . .	*i.e.* "Noble language," the High Sundanese.
Bashi . . .	Islands N. of Philippines; natives of Malay stock; speak the Ibanag language, current also in province Cagayan, Luzon.
Basisi . . .	Wild tribe, Malacca; Naning district; "unadulterated Malays" (Logan).

Batanes	Islands same as Bashi, which see.
Batavian	Sundanese dialect mixed with Malay elements; spoken in town and district of Batavia, W. end Java.
Batchian	Island W. side S. peninsula Jilolo; sub-Malayan, race and language akin to those of Tidor and Ternate. Here are also some Galelas, Orang-Sirani, and people from Tomore Island, E. Celebes.
Batta, Battak, Batak	Large nation, Sumatra, between the Atyehs N. and Malays S.; sub-Malayan type. Although cannibals, have a written language, of which chief dialects are the Toba, Mandailin or Ankola, Dairi, Pakpak, and Zingkal; alphabet based on the Devanâgari. Area of Batta country, 17,000 square miles; population about 320,000.
Batu	Islands W. coast Sumatra, between Nias and Nassau; natives originally from South Nias; still speak same language.
Batu-mera	Tribe close to town Amboyna, Moluccas; speech distinct, with Ceram and Malay elements.
Bau	See Fiji.
Bauro	See Solomon Islands.
Bawian	Island N. coast of Java, 50 miles W. of Madura Strait; speech closely akin to Madurese; Javanese current in one district.
Behisotra	See Sakalava.
Belang, Bilong	Tribe, Minahasa, N. Celebes; speech distinct, with Malay and Tagala elements; people sub-Malayan?
Bellûm-bellûm	Australian tribe, L. Wellington, Gippsland, Victoria.
Belonese	Chief people E. Timor; sub-Papûan; speech distinct, with sub-dialects Teto, Vaiqueno, Viale. See Timor.
Bentenang	Tribes N. Celebes, Minahasa; sub-Papûan; speech distinct, with Malay and Tagala elements.
Betsimasaraca, Betsimisaraca	Collective name of the people on E. coast Madagascar; sub-Malayan stock and speech; impinge on the Sakalavas about 48° E. long., near N.W. coast; chief tribes—Sihanakas (40,000), Tankays (50,000), Tanalas (20,000), Ikongos (20,000).—(Bishop Kestell-Cornish, *Tour in North Madagascar*, 1877; *passim*.) Total population, 300,000.
Betsileo	Hova Nation, Madagascar; S. of province Imerina, with distinct Malagasy dialect.
Bezanozano	Tribe E. coast Madagascar, with distinct Malagasy dialect; akin to the Betsimisaraca.
Biaju	A Javanese collective name for the Orang-Laut, which see.
Biajuk	Dyak tribes, S. Borneo, Banjermassin.
Biak	Island Geelvink Bay, N. coast New Guinea; Papûan stock and speech; akin to Mafors and Arfaks.
Bicol	Nation, Philippines; sub-Malayan stock, intermediate between Tagalas and Bisayans; speech distinct, spoken in provinces Albay, Camarines N. and S., and Tayabas, Luzon, also in Island Burias exclusively, and in parts of Islands Masbate, Ticao, Catanduanes, and adjacent islets; in importance ranks next to

	Tagalog and Bisayan. Bicol is spoken in greatest purity about Mount Ysarog, province Camarines, though these people are often erroneously called Igorrotes (Jagor).
Bijenelumbo . .	S. Australian tribe.
Bilas . . .	Negrito tribe, Malacca.
Billiton . . .	Island midway between S. Sumatra and Borneo; natives chiefly Orang-Laut, here called Sika.
Bima . . .	Sub-Malayan people, E. Sumbawa; speech distinct; current also in W. part Island Floris, and intervening islets.
Bisaya . . .	Dyak tribe, N. Borneo, on river Limbang.
Bisayan . . .	*i.e.* "Painted," "tattooed;" next to the Tagalas the chief nation in Philippines; sub-Malayan stock; speech distinct and akin to Tagala. Spoken with great dialectic variety by about 1,000,000 in Islands Panay, Bicol, Zebu, Leyte, Ticao, Romblon, and Samar exclusively; also in parts of Mindanao and Negros; is thus the most widely diffused in the archipelago; formerly written in a peculiar character based on the Devanâgari, and now obsolete.
Boeroe . . }	Island E. from Celebes, near W. coast Ceram; natives sub-Papûan in interior with Ceram affinities, sub-Malayan on coast with Celebes affinities; speech of former akin to Ceram, of latter akin to that of Xulla Islands further N.; varieties are—Cajeli, Wayapo, Massaratty, on E. coast. Boeroe is the Dutch spelling, to be pronounced Buru. Touching the statement that this island was the starting-point of the first Mahori dispersion, see p. 612.
Buru . . }	
Buro . . }	
Boeton . . }	Island off S. end S.E. peninsula Celebes; speech akin to Bugis, and written in the Bugis character.
Butung . . }	
Bôgîjîab . . .	Mincopie tribe, S. Andaman.
Bojingîjîda . .	Mincopie tribe, S. Andaman.
Bolaango . . .	Sub-Papûan tribe, N. Celebes; speech distinct and current *in Boloong*, Uki, Bentauna, and other districts.
Bolang-hitam . .	Sub-Malayan tribe N.W. coast Celebes; speech distinct with Tagala affinities (Wallace). Seems to be the same dialect as the Bolong-itang-ota of other writers.
Boni . . .	Celebes nation, about Gulf of Boni; a branch of the Bugis people.
Boonoorong . .	Australian tribe, S.E. coast, near Western Point.
Borneo . . .	Interior occupied by a sub-Malayan people collectively known as Dyaks, which see. Seaboard mostly held by people of pure Malay stock, traditionally from Menangkabu, Sumatra; on N. coast are mixed with Bugis, Dyak, Sulu, and Chinese elements. The name Borneo is purely geographical, being merely an extension and modified form of *Bruni*, the first part of the island discovered by the Europeans.
Borumlît . . .	S.E. Australian tribe, Victoria.
Botango . . .	Tribe, N. Celebes, Minahasa; speech distinct; sub-Papuan?

Boul-boul. . .	S.E. Australian tribe; from entrance to Gippsland Lakes to Rotomah Island.
Bowditch . . .	See Fakuafo.
Brabriwûlong . .	S.E. Australian tribe; between the Mitchell and Tambo rivers.
Brabrolong . .	S.E. Australian tribe, about Bairnsdale, N. Gippsland, Victoria; formerly very powerful; now nearly extinct.
Brajerak . . .	The collective name of all the S.E. Australian tribes separated from Gippsland by the Great Divide Range; so called by the Karnathan-Kani, which see.
Brissi . . .	See Timor.
Brummer . . .	Islands S.E. N. Guinea; see p. 609.
Bubonko . . .	Dialect of island Touhia, Gulf of Tomini, E. coast Celebes; sub-Papûan?
Bugis . . .	Dominant race in Celebes, so called by the Malays; national name *Wugi*; occupy S.E. and S.W. peninsulas as far S. as the Mangkassars; sub-Malay stock; speech very distinct; 226 words in 1000 common to Malay and Javanese, rest mostly native; written in a peculiar alphabet common also to Mangkassar, based on Devanâgari, and consisting of twenty-three consonants and six vowel marks. All have been Moslems since about 1600, and are great traders, the most enterprising tribes being known collectively as *Waju*.
Bundah-wark-kani .	S.E. Australian tribe; Gippsland, Victoria.
Bûra-bûra . .	S.E. Australian tribe; Murray river, above Darling Junction.
Burapper . . .	Australian language spoken by the Millegundît tribes; which see.
Burik . . .	Wild tribe, Philippines, island Luzon, province Abra, N. part of W. Cordilleras; Tagala stock.
Buru . . }	See Boeroe.
Buro . . }	
Burhwundeitch .	Australian tribe; W. Victoria.
Busao . . .	Wild tribe, Luzon island; Saguey Mountains; Tagala stock.
Butung . . .	See Boeton.
CAJELI . . .	See Boeroe.
Calamianes . .	Islands, Philippines; speech distinct, and called Coyuvo; natives of sub-Malayan stock.
Calingas . . .	Wild tribe, island Luzon, province Cagayan; in mountains between rivers Apayo and Tajo; Tagala stock.
Camarian . . .	See Ceram.
Car Nicobar . .	See Nicobar.
Caroline . . .	Islands, N. Pacific, between Philippines and Marshall; Mikronesian stock and speech.
Cebu . . }	Island, Philippines, between Negros and Leyte; natives of Bisayan stock and speech.
Zebu . . }	
Cebuano . . .	The language spoken in island Negros, Philippines (F. Jagor, p. 55); akin to Bisayan.
Celebes . . .	Natives of sub-Malayan stock, represented by the Bugis, Mangkassars, Mandhars, etc., in S.; by the

	Minahasa and other tribes in N. The former are semi-civilised Moslems speaking cultivated languages; the latter mostly unlettered wild tribes, those of the interior being collectively known as *Dyaks* (which see); in the centre are the little-known Turaja, said to be cannibals and head-hunters; on many parts of coast are the Orang-Laut, here called *Bajau*, and in the N. the Malay race is spreading and the Malay language gradually superseding the numerous dialects spoken in Minahasa. Of these Wallace mentions the Tomohon, Langowen, Ratahan, Belang, Tanawanko Kema, Banlek, Menado, and Bolang-hitam, all seemingly with Tagala elements through the intermediate Sanguir and Siao islands. The Papûan element is very slight in Celebes, though Wallace speaks of some idioms as containing "a Celebes, a Malay, and a Papûan element."
Cellates . . .	See Orang-Salat.
Ceram . . .	Natives chiefly of sub-Papûan stock, more decidedly Papûan than those of Jilolo (Wallace, p. 352); languages very numerous. Wallace gives specimens of Awaiya, Camarian, Teluti-Hoya, and Ahtiago-Tobo, on S. coast; Gah on east coast; Wahai current along N. coast; Ahtiago in interior. Others mentioned by Ekris are—Kaibolu, Hatusua, Peru, Rumahkai, Tehulate, and Waisamu. Von Rosenberg also remarks (ii. p. 292) that the S. coast people between Toluti Bay and east end have a different language from those farther inland, and that both are "entirely different" from those of the natives E. and W. of them.
Ceram-Laut . .	Island E. from Ceram; present natives of sub-Malay stock, from island Kilwâru, close to E. end Ceram.
Chandana . .	Island. See Sumba.
Chatham . . .	Islands, 12 degrees E. from N. Zealand; peopled by Maoris in 1835, who destroyed or absorbed the original Moriori of Mahori stock; present population much mixed—Maori, Moriori, Whites, Chinese, etc.
Cheribon . . .	Province Java, between the Sunda country and Java proper; natives speak a mixed Javanese and Sundanese dialect.
Cherry . . .	Island. See Anuda.
Cimarros . . } Cimarrones . } Chimarros . }	A term applied to certain tribes in islands Luzon, Leyte, Samar, Philippines, and to the Ladrone islanders; is not an ethnical name, but, like "Alfuro," seems merely to designate the uncivilised, pagan, and unsettled Tagala and Bisayan tribes. Thus, Crawfurd writes:—"The Zambales mountains (Luzon) are occupied by some tribes of Negritos, and by the brown or Malay tribes called Igorrotes and Cimmarones."
Colac . . } Koligon . . }	Australian tribe, W. Victoria.
Colongulac . .	Australian tribe, W. Victoria.

Contrariété	Island. See Ulaua, under Solomon Islands.
Cook	Islands. See Hervey.
Coonawane	Australian tribe, west of Emu Creek, W. Victoria.
Cornu	Australian tribe, Yelta, Lower Murray.
Coyuvo	See Calamianes.
Cudjallagong	E. Australian tribe, near Macquarie Range.
DADAYA	Uncivilised Tagala people with distinct speech; Luzon, province Cagayan.
Dairi	W. Batta dialect, Samatra; closely akin to the Toba.
Dajak	The German spelling of Dyak, which see.
Darty Darty	S.E. Australian tribe; river Murray, above Darling Junction.
Dautgart	Australian tribe, west of Colac, Victoria.
Dayak	See Dyak.
Dedele	Tribe, S.E. New Guinea; see p. 609.
Deeries	Australian tribe, about Lake Hope, Cooper's Creek district.
De Peyster	Island. See Ellice.
Dieyerie	N. Australian tribe, N.W. of the Great Bight.
Djappuminyou	Australian tribe, Wimmera, Victoria.
Dooveraak ba Daan	S.E. Australian tribe, on rivers Buchan and Snowy, Victoria.
Dorey	Tribe, N. coast New Guinea, N.W. side Geelvink Bay; of Papûan speech and stock.
Doumajal	Wild tribe, island Mindoro, Philippines; Tagala stock.
Duauro	See New Caledonia.
Dûwinbarap	Australian tribe, Wimmera, Victoria.
Dyak Dayak	General Malay name for the wild and unsettled aborigines of Sumatra, Celebes, and especially Borneo; equivalent to "savage," but applied only to those of Malay or sub-Malay stock, whereas Alfuro is applied chiefly to those of Papûan stock. In Borneo form the great bulk of the population, divided into innumerable tribes named mostly from the rivers on which they dwell. Whether they are distinct from the Kyans of E. Borneo has not been clearly ascertained. The Dyaks seem to be a mixture of Mahori and sub-Mongolian races, "closely allied to the Malay and more remotely to the Siamese, Chinese, and other Mongul races." (Wallace, p. 68.)
EAST CAPE	S.E. end New Guinea: see p. 609.
Easter	Island. See Rapa-Nui.
Ebon	Island, Marshall group (Ralick chain); well marked Mikronesian dialect, with special inclusive and exclusive pronominal forms, tense endings, etc.
Echuca	S.E. Australian tribe at junction of rivers Murray and Campaspe.
Eddystone	See Solomon Island.
Efate Efat	Island, N. Hebrides; sub-Papûan stock; but at *Mel* and *Fil* are Mahori colonies, still speaking Mahori dialects.
Elema Ilima	Tribe S.E. New Guinea, stretching 50 m. along coast from Muro to river Oiubu, 10 m. from Yule island; akin to the Motu; speech distinct.

Ellice . . .	Islands 10 degrees N.W. from Samoa, whence peopled; speech retains the organic Mahori *s*, and is otherwise closely akin to Samoan; slight varieties, Vaitupu (*Oaitupu*), Nukufetau (De Peyster), Funafuti (Ellice); pure Samoan now generally current.
Emu Mudjug . .	S.E. Australian tribe; Upper Murray and Indigo Creek.
Endé . . }	The chief people and language of Island Floris between
Endeh . . }	Sumbawa and Timor; sub-Papûan stock; mark the extreme western limits of this race. The Ende language is spoken in the centre of the island as far west as the Bima district.
Engano . . .	Island off S.W. coast Sumatra; natives of sub-Malayan stock; speech totally distinct, and "wholly unintelligible to the Malays" (Crawfurd); call themselves Kerik-ye-e (Von Rosenberg, i. 207); chief tribes, Puludua, Karkûba, Naonya, Malakoni, Kahoda, Karkûa, Kalikoko, Barhau, Phahanuma, Kahehoyo, Pulu-Satu, Talikoko, Labuhu, Hehôbi, Latuhe.
Epi	See New Hebrides.
Erromango . .	Island, New Hebrides; distinct sub-Papûan speech (Von der Gabelentz, vol. i.)
FATÉ . . .	See N. Hebrides.
Fakuafo . . }	Island. See Union.
Bowditch . . }	
Favorlang . .	Formosan tribe; sub-Malay stock; speech distinct.
Fiji	See Viti.
Fil	See Efat.
Floris . . }	Island; Sunda group; natives of sub-Papûan stock,
Flores . . }	speaking at least six distinct languages, of which Bima in W. and Endeh in centre are the chief. Papûan blood is not met farther W. than this island.
Florida . . .	See Anudha.
Formosa . . }	Island, W. coast, China; W. part occupied by Chinese
Taiwan . . }	settlers, the rest by sub-Malay races, partly civilised (Pepukwan), partly savage (Yukan); speech a branch of the Malay. The presence of Negritos is suspected in its interior.
Fotuna . . .	Island, New Hebrides; speech a mixed Mahori and sub-Papûan dialect.
Friendly . . .	Islands. See Tonga.
Funafuti . . .	Island. See Ellice.
GADDAN . . }	Tagala nation, Philippines; Luzon; provinces, Cagayan,
Gaddané . . }	Isabela, Nueva Vizcaya, and Saltan; speech distinct.
Gah . . .	Sub-Papûan tribe, E. Ceram; speech distinct.
Galela . . }	Sub-Papûan stock, N.W. coast, Jilolo; speech distinct
Tabellor . . }	from all others in this region (Raffray); in physique, said by Wallace (p. 325) to resemble the Mahoris of Tahiti and Hawaii.
Galelor . . .	Tribe, E. coast, N. Peninsula, Jilolo; type quite distinct from that of the natives (Raffray).
Galeteng . . .	Sub-Papûan tribe, with distinct speech; Floris, Sunda Islands.

Gambier	Islands, S. Pacific, S.E. end Tuamotu Archipelago; Mahori stock and speech, probably through Tuamotu from Tahiti.
Gani	Tribe, Jilolo, S. peninsula; speech distinct.
Garontalo	Sub-Malayan tribe, with distinct speech; near Minahasa, N. Celebes.
Gebi	Island between Jilolo and Waigiu; natives of Papûan stock; some Malay settlers on coast from the Moluccas; vocabulary in *Voyage de l'Astrolabe.*
Gera	See Solomon Islands.
Gilbert Kingsmill	Islands southernmost of the Mikronesian, reaching 3 degrees below equator; natives form a connecting link between the Mikronesians and true Mahoris; several well-marked dialects inclining more to the Mahori than to the Malay type, as shown by the presence of the Mahori article *te*, here used both definitely and indefinitely.
Gilolo Jilolo Halmahera Kaha-lamo	Natives of two types: sub-Papûan, and even pure Papûan in N. peninsula (Sahoe); elsewhere sub-Malay (Raffray and Dr. Hamy in *Bul. de la Soc. de Géo.* xiii. p. 480-90); tribes and languages very numerous, but little known. Wallace mentions Gani in S. peninsula (sub-Malay), Sahoe and Galela in N. peninsula (sub-Papûan). The native name of this island is Kaha-lamo = "Great Land," which in the Ternate language is "Halmahera." *Jilolo* or rather *Jailolo*, is only the name of a district on W. coast of N. peninsula, which has been extended to the whole island (Von Rosenberg, ii. 402).
Ginning-Maton	S.E. Australian tribe; Talangatta Creek, Victoria.
Gnurellean	S.E. Australian tribe, about Campaspe.
Goram	Island, E. coast, Ceram; sub-Papûan stock; speech spoken also at E. end Ceram; akin to the Ceram languages, but with a distinct element, not met elsewhere in the archipelago (Wallace).
Guadalkanar	See Solomon Islands.
Guaham	Island, Mariannes; vocabulary in *Voyage de l'Astrolabe.*
Gudang	Australian tribe (*Voyage of Rattlesnake*, ii. 279).
Guimanes	Wild tribe, Luzon; in mountains between provinces S. Ilocos and Abra; said to be half-caste Negritos and Malays.
Gunbower	S.E. Australian tribe; river Murray, near Mount Hope.
Gundanora	S.E. Australian tribe; Omeo uplands, Victoria.
HALMAHERA	See Gilolo.
Harafora	See Alfuro.
Haroukun	See Amboyna.
Hatusua	See Ceram.
Hawaii	Sandwich Islands, N. Pacific; Mahori stock and speech; originally peopled from Tahiti soon after its settlement by the Samoans; speeeh much changed and enfeebled in its phonetics.
Heath	Islands, S.E. New Guinea. See p. 609.
Hervey Cook	Islands, S. Pacific; natives of Mahori stock; speech shows most affinities with Tahitian; current in Raro-

	tonga, Mangaia, Aitutaki, etc. This group presents more distinct dialectic varieties than any other except Marquesas; the typical dialect is that of Rarotonga, which see.
High Malay . .	The standard Malay language of literature, for which see Malay.
Hila . . .	See Amboyna.
Hog . . .	Island. See Simalu and Maros.
Hongotes . .	Wild tribe, Philippines, in mountains, province Nueva Ecija; Tagala stock.
Honimoa . .	See Saparua.
Hotontalo . .	Tribe, N. Celebes, Minahasa; speech akin to Menado.
Hova . . .	The rule race, Madagascar, central plateau; sub-Malayan stock and speech. See Malagasy.
Hoya . . .	See Ceram.
IBALAO . . }	Tribe Luzon; province Nueva Vizcaya; speech distinct
Ibilao . . }	from Tagala; said to be half-caste Negritos and Malays.
Ibanac . . }	Nation, Philippines, with distinct speech current in
Ibanag . . }	provinces Cagayan and Isabela, Luzon, and in Batanas Isles; Tagala stock; grammar by F. de Cueavas, 1854.
Ibâra . . .	Hova nation, Madagascar, S. from the Betsileo country; distinct Malagasy dialect.
Idäan . . .	See Murut.
Idayan . . .	Nation, Philippines, with distinct speech current in Luzon, province Cagayan.
Ifugao . . .	Tribe Luzon, province Nueva Vizcaya; speech distinct from Tagala.
Igorrote . . .	Nation, Philippines, with distinct speech current in provinces Benguet, Bontoc, Lepanto, Tiagan, Island Luzon; dialects very numerous; people said to be a mixture of Tagala, Chinese, and Japanese (Fr. Müller, *Ethnologie*, p. 32).
Ikongo . . .	See Betsimisaraca.
Ikolu . . .	Tribe, S.E. New Guinea; see p. 609.
Ilema . . .	See Elema.
Illanos . . }	Piratic race, Chinese seas, whose original home is on
Illanuns . . }	S. coast Mindanao, Philippines, but now settled also
Lanuns . . }	in State Brunai, Borneo; sub-Malayan stock, akin to the Orang-Laut.
Ilocano . . .	Numerous nation, Luzon, with distinct speech current in provinces Abra, Benguet, Cagayan, Ilocos, N. and S. Lepanto, Nueva Ecija, Pampanga, Pangasinan, Union, Principe, and Zambales; Tagala stock.
Ilongote . . .	Nation, Luzon, with distinct speech current in provinces Nueva Vizcaya and Principe; Tagala stock.
Indo-Pacific . .	The collective ethnical term, here substituted for *Malayo-Polynesian*, as fully explained at p. 597.
Interoceanic .	The collective name of all the races treated in this section; preferred to *Oceanic*, for reasons stated at p. 594. For scheme of Interoceanic races, see p. 594. This term is purely geographic, grouping races irrespec-

	tive of their affinities, and answering to the expressions *European, African, American, Asiatic races*, of the other sections of the work.
Isimahety . .	See Sakalava.
Isinayes . .	Wild tribe, Luzon, in mountainous province Ilocos, S.; akin to the Igorrotes.
Ita	See Aëta.
Itanegs . .	Wild tribe, Luzon, in mountains of province Ilocos, S.,
Tinguianes .	
Itanes . . .	Nation, Luzon, with distinct speech current in province Cagayan ; Tagala stock.
Itapanes . . .	Wild tribe, Luzon, in mountains north end ; Negritos, or half-caste Negrito-Tagalas.
JACKALBARAP . .	Australian tribe ; Wimmera, Victoria.
Ja-jow-er-ong .	S.E. Australian nation, about river Loddon and its tributaries, west to the Pyrenees. Chief tribes : Learabulluk, Pilauhingûnditch, Kalk-Kalk, Wonghurraghîrar, Galgal, Townimburrlar, Wayrerong.
Jajuorong .	
Jajowurrong .	
Jakelbalak . .	S.E. Australian tribe ; Wimmera, Victoria.
Jakun . .	A collective Malay term for the wild tribes of Malayan stock in Malacca, southwards to Johor ; all speak rude but pure Malay dialects.
Jambi . . .	Malay nation, E. coast Sumatra, between Siak and Palembang, N. and S.
Jarambiuk . .	Australian tribe ; Wimmera, Victoria.
Jarawa . . .	Mincopie tribe, Little Andaman Island.
Java . . .	Three sub-Malayan languages : Sundanese in west as far as prov. Cheribon, Javanese in centre, and Madarese in the east, nearly west to Surabaya.
Javanese . . .	The most cultivated of all the Malayan tongues, current in the central section of Java, between the Sundanese and Madurese, W. and E. In structure intermediate between the simple Malay and the more developed Tagala ; is fully agglutinating, with pre-, post-, and infixes, and modified roots. There are altogether five varieties : 1. The old, for which see *Kawi ;* 2. *Krama*, the language of inferiors to superiors, overcharged with Sanscritic elements ; 3. *Ngoko*, that of superiors to inferiors, the simplest, mostly consisting of pure sub-Malayan elements ; 4. *Madya*, used between equals, intermediate between Krama and Ngoko ; 5. *Basa Kraton* or *Kadaton*, the court speech, used in presence of princes, has much in common with Krama. The Javanese alphabet, consisting of thirty-two letters, is based on the Devanâgari, and is traced on inscriptions and manuscripts back to the twelfth century, but in its present form is only 400 years old ; is current also in Bali, Lombok, and Palembang (Sumatra).
Jervis Bay . .	E. Australian tribe, S. from Port Jackson ; vocabulary in *Voyage de l'Astrolabe :* "Malgré le peu de distance de la baie Jervis au Port-Jackson, on sera frappé des énormes différences qui existent entre les

	idiômes des peuplades de ces deux points de l'Australie" (p. 11).
Jhongworong . .	S.E. Australian tribe, on river Goulburn.
Jilolo . . .	See Gilolo.
Juru . . .	Malayan tribe, Malacca.
KABARAN . . .	See Papukhwan.
Kaibolu . . .	See Ceram.
Kai-colo . . .	See Viti.
Kaioá . . .	Islands W. of Jilolo, on equator. Sub-Papûan stock; speech distinct; akin to those of adjacent islands.
Kaitongaviti . .	See Viti.
Kalkalgundît . .	S.E. Australian tribe about river Loddon.
Kamarian . .	See Camarian, under *Ceram*.
Kamilaroi . .	Large E. Australian nation about Liverpool Plains, Barwan, Namoi, and other rivers. For its seven chief tribes, see p. 603.
Kanak . . .	The Mahori word *Kanaka* (tanata, tahata, tangata, etc.), "man;" used by some writers as a collective designation of the South Sea Islanders; hence is not the name of any particular race or tribe. The French now write it *Canaque*.
Kapatsi . . .	Mahori (?) tribe S.E. N. Guinea, in villages about Manumanu, west of Redscar Bay.
Kapun-Kapun-bāna .	Australian tribe, Wimmera, Victoria.
Karaula . . .	Australian tribe.
Karnathan-Kani .	"Lowlanders," the collective name of all the S.E. Australian tribes on Gippsland side of Great Divide Range.
Karus . . .	Hill tribe N.W. New Guinea, behind Geelvink Bay; reputed cannibals. Described by M. Raffray (*Bul. Soc. de Géo.*, Feb. 1878) as "totally distinct race from the Papûans;" may possibly be a remnant of the aboriginal Negrito inhabitants of New Guinea.
Katingar . . .	Dyak tribe, Borneo, with distinct speech (Tiedtke, quoted by Cust).
Kawi . . .	The ancient form of the Javanese language, known through Humboldt's masterly treatise, surviving in two old MSS. and on numerous stone and brass inscriptions dating back to 12th century, and is still the language of the Buddhist liturgy in Bali and Lombok, but not in Java. The word *Kawi* is the correlative of *Jawi*, "refined," answering to the Sanskrit *Kavija* = "narrative," the end vowel being changed from *a* to *i*, *Kawa* to *Kawi*, to conform it to the *Krama*, or polite language. It is written in an obsolete character, from which the modern Javanese is derived.
Kayan . . .	The collective name of numerous Borneo tribes stretching from Brunai across the island nearly to E. coast. Sub-Malayan stock, either the same race as, or closely allied to, the Dyaks; are the most powerful of all the non-Malay peoples in Borneo. Of their language 114 words in 1000 are common to Malay and Javanese, the rest original.

Ké, Key . . .	Islands W. of Aru Islands; natives "true black Papûans" (Wallace, p. 604); but Von Rosenberg (ii. 348) regards them as intermediate between "the Malay and Melanesian," *i.e.* Papûan, races. On coast are some descendants of the Banda Islanders, settled here since 17th century, and still speaking a peculiar idiom. See Banda.
Kedah . . .	Malay nation, Malacca; pure Malay stock and speech.
Keilambeitch . .	Australian tribe, W. Victoria, east of Lake Terang.
Kema . . .	Sub-Malayan tribe with distinct speech; E. coast N. Celebes.
Kerabialbarap . .	Australian tribe, Wimmera, Victoria.
Kerepunu . } Kirapuno . . }	Tribe S.E. N. Guinea, stretching 40 m. along coast from river Kapakapa to river Muro; akin to the Motu? seem to be a mixed Mahori and Papûan stock; perhaps the most remarkable people in all New Guinea, with golden hair in infancy, blonde in boyhood, then changing to dark chestnut and black with reddish tints, growing in long silky ringlets (Rev. W. Y. Turner); speech evidently Mahori.
Kerik-ye-e . .	See Engano.
Kiao . . .	Dyak tribe N. end Borneo, near Mount Kini Balu. Speech distinct (Lowe).
King George Sound .	Australian tribe, S.W. coast; vocabulary in *Voyage de l'Astrolabe.*
Kingsmill .	See Gilbert.
Kio . . .	Tribe, Flores; sub-Papûan; speech distinct.
Kirapuno . . .	See Kerepunu.
Kissa; Kisser .	Island, Serwati group, E. from Timor; sub-Papûan stock and speech. See Serwati.
Kling . . .	See Orang-Kling.
Knenkorenwurro .	Australian tribe.
Knindowurrong .	S.E. Australian tribe, Pyrenees Mountains.
Kohom . . .	Dyak tribe, N. end Borneo, near Mount Kini Balu. Speech distinct.
Koiari . . .	Papûan tribe S.E. New Guinea, on the hills back of Port Moresby, from Annemata to Mount Owen Stanley. Speech quite different from that of the coast tribes. Koiari is their Motu name; the Kerapuno call them Kuni.
Koitapu . . .	Tribe S.E. New Guinea, on the mountains inland from Port Moresby. Papûan stock? Speech same as Koiari.
Koligon . . .	See Colac.
Kolore . . .	Australian tribe, W. Victoria.
Kowrarega . .	Australian tribe.
Komring . . } Kumring . . }	District in Palembang, S. Sumatra. Speech distinct, and written in a peculiar alphabet based on the Devanâgari.
Konga . . .	Sub-Papûan tribe with distinct speech; Island Flores, Sundas.
Korinchi . . .	Sub-Malayan nation, near W. coast Sumatra, about head streams Indrapura river, bordering on the Rejangs. Speech distinct, and written in a peculiar character based on the Asoka (Indian).

Korotch, Koroche .	Australian tribe, W. Australia, east of river Moyna.
Kromelak . }	S.E. Australian tribe, Wimmera, Victoria.
Kurm-me-lak . }	
Krama . . .	*i.e.* "order," "arrangement" (Sanskrit); the polite Javanese language; called also *Bahâsa*, *i.e.* "speech." See Javanese.
Krowithan-Kûlo .	S.E. Australian tribe, between Snowy and Genoa rivers, near Twofold Bay.
Kubu . . .	Wild tribes, interior Central Sumatra. Sub-Malayan stock and speech; between Jambi and Palembang.
Kulkalija . . .	Sub-Papuan (?) tribe, E. peninsula, New Guinea.
Kulkyne . . .	S.E. Australian tribe, Lower Murray river.
Kulo . . .	Tribe S.E. New Guinea. See p. 609.
Kumring . . .	See Komring.
Kuni . . .	See Koiari.
Kupang . . .	Sub-Papûan tribe, W. Timor, with distinct speech.
Kuring . . .	See Basa-Kuring.
LACHLAN . . .	Australian tribe about Regent Lake.
Ladrone . . .	Islands. See Marianne.
Lail-buil . . .	S.E. Australian tribe, Wimmera, Victoria.
Lampung . . .	Sub-Malayan nation, S.W. end Sumatra, bordering W. on the Rejangs, N. on Palembang. Speech distinct; about one-third of unknown origin, rest common to Malay and Javanese, with some Sanskrit and Arabic words; written in a peculiar character based on the Devanâgari. Area 8560 square miles; population about 85,000.
Lamurêk . . .	Mikronesian; Caroline group; speech akin to Ulea.
Langowen . .	See Minahasa.
Lanuns . . .	See Illanuns.
Larika . . .	See Amboyna.
Leehûrah . . .	Australian tribe, W. Victoria, about Mount Leura.
Leueneuwa . }	Island, S. Pacific, E. of Solomon group, 5° S. lat., 159° 30′ E. long. Natives of Mahori stock and speech.
Ongtong-Java . }	
Letti . . .	Sub-Papûan tribe with distinct speech; Serwatty Islands, between Timor and Timor-Laut.
Liang . . .	See Amboyna.
Lifu . . .	See Loyalty.
Likupang . . .	Sub-Malayan tribe, Celebes.
Limba-Karajia . }	Australian tribes.
Limba Pyu . }	
Litchy-Litchy . .	S.E. Australian tribe; Murray river, between Echuca and Darling Junction.
Lombok . . .	Island between Bali and Sumbawa, Sunda group; two races and languages: Sassak in interior; Balinese round coast.
Lord North . .	Island. See Tobi.
Louisiade . . .	Islands E. end New Guinea; natives of sub-Papûan stock and speech.
Low Malay . .	Not a Malay dialect, but an ungrammatical and conventional form of High Malay, serving as the medium of intercourse between Europeans and the natives in Batavia and other parts of the archipelago.

Loyalty . . .	Islands E. from New Caledonia; natives mostly sub-Papûans; chief dialects—Lifu, Mare. The natives of Uea (Uvea) are Mahoris from Uvea (Wallis) Island, and still speak a Mahori dialect.
Lubu . . .	Wild tribe, Central Sumatra; pure Malayan stock (?)
Lugunor . . .	Mikronesian; Caroline group.
Lukeba . . .	Islands. See Viti.
Luzon . . .	Island, Philippines. Two stocks: Malayan (Tagala) and Negrito (Aëtas), both speaking a great variety of languages. Of the civilised Tagala nations the chief are the Tagalas proper, Ilocos, Pampangas, Pangasinan, Cagayan, and Bicol or Vicol, all with distinct speech. Of the uncivilised Tagalas there are at least fifteen, also speaking distinct idioms, of which next to nothing is known; the chief are—Igorotte, Suflin, Ibanag, Itang, Idayan, Gaddan, Dadaya, Apayo, Malaneg, Tinguian, Ibilas, Ifugas, Ilongote, Zambal.
MACASSAR . .	See Mangkassar.
Macquarie . .	Australian tribe, Port Macquarie.
Madang . . .	The chief Dyak tribe in State of Pasir, E. side Borneo.
Madurese . . .	Sub-Malayan nation, Madura island, off N. coast Java; with distinct speech, of which there are two varieties, Madurese proper in the west and on opposite coast, Java, and Sumanap in the east, written with the Javanese character; of 1000 words, 250 are native, 170 Javanese, 145 Malay, 360 common to Malay and Javanese, 40 Sanskrit, 35 Arabic (Crawfurd).
Madya . . .	See Javanese.
Mafors . . .	Papûans, N.W. coast New Guinea, Mafor and Mansinam islands, and at Dorey and Amberbaki, about Geelvink Bay; akin to the Arfaks and Biak islanders.
Magindanao . .	See Mindanao.
Mahaga . . .	See Solomon Islands.
Mahori . . .	The collective name here adopted for the large brown eastern Polynesian race (see pp. 597; 610-17).
Maiva . . .	Tribe, S.E. coast New Guinea, extending 45 miles along coast from Oiubu to Kapatsi river; seem akin to the Motu, but speech distinct.
Malacca . . .	Three stocks—Siamese in N.; Negritos (Samang) in Kedah, etc.; Malays, both settled and savage elsewhere; besides English, Chinese, and Orang-Sirani, or descendants of Portuguese, in Malacca town and neighbourhood. Malacca is regarded by some as the true home of the Malay race; but the presence of Negritos shows that they are here intruders almost certainly from Sumatra in two streams—prehistoric accounting for the Malay wild tribes, and historic accounting for the civilised and Mahommedan Malays of the native states. Chief wild tribes are the Yakuns, Udai, Sakai, Pungan, Basisi, Salimba, Mintira, Saletar. The Siamese (Samsan) are now mostly Mohammedans, speaking a mixed Siamese and Malay dialect.

Malagasy	The literary language of Madagascar; Malayan family; current chiefly amongst the Hovas, and spoken generally with remarkable uniformity; but there are several dialects noticed by P. L. Ailloud in *Malay Grammar*, Tananarivo, 1872.
Malaneg	Tagala tribe, Philippines, with distinct speech; current in province Cagayan, Island Luzon, only.
Malay, High Malay, Bahâsa-Malâyu	The typical Malay language, vernacular in Malacca and adjacent islands, in a large portion of Sumatra S. from the Batta country, in Bangka and Billiton Islands, round coast Borneo, and the general medium of intercourse throughout the archipelago; of simple structure; in this respect intermediate between Mahori and the sub-Malayan languages of the Sunda islands; written with the Arabic character, with five additional letters to express special native sounds.
Malayan	The collective name of the western branch of the Indo-Pacific races, as explained at p. 597.
Malayo-Polynesian	A collective ethnical expression for all the Malayan and Polynesian races; here rejected and replaced by Indo-Pacific for the reasons given at p. 596.
Mallikolo	Island, New Hebrides; distinct sub-Papûan speech (Von der Gabelentz, vol. i.)
Malo	Dyak tribe, Borneo (Crawfurd).
Mamalla	See Amboyna.
Mamamanua	Wild tribe, Philippines, island Mindanao, province Caraga; Negrito stock; described as "very black negroes."
Manatoto, Toto	Sub-Papûan tribe, E. Timor; speech distinct. See Timor.
Mandailin, Mundailung	See Batta.
Mandailing	See Battak.
Mandar, Mandhar	Sub-Malayan nation, Celebes, in S. portion of nucleus between the Bugis district of Masenreng and the coast facing Borneo; distinct speech.
Mandaya	Wild tribe, Philippines, island Mindanao, district Zamboanga; sub-Malayan stock, very fair, and supposed to be half-caste Dutch and natives.
Mangaia	See Hervey.
Mangarei	Sub-Papûan tribe, W. coast island Floris, with distinct speech.
Mangareva	Island, Gambier group; well-marked dialect.
Mangkassar, Macassar	Sub-Malayan nation, S. extremity, S. peninsula Celebes and on Salayer island; with distinct speech, akin to Bugis and written in the same character.
Manguianos	The collective name of the wild tribes in interior island Mindoro, Philippines; so called by the coast people; sub-Malayan stock.
Manobo	Wild tribe, Philippines, island Mindanao, district Cotabatu; sub-Malayan stock, with distinct speech current in province Caraga only.
Manowolko	Island S. of Goram, E. end Ceram; natives a mixed Malay and Bugis race with some Papûan blood; language same as that of Goram (Wallace).

Mansinam . .	See Mafors.
Mantâwi . . .	See Mentâwey.
Mantra . . .	See Mintira.
Manuai . . .	See Hervey.
Manuloko . . .	Tribe, S.E. New Guinea ; see p. 609.
Maori . . .	*i.e.* "native," "indigenous;" the collective name of the aborigines of New Zealand; Mahori stock and speech, through the Tongan or the Raro-Tongan, with which the language has most affinities, though traditionally from Hawaiki, *i.e.* Savaii, Samoan group (see p. 614). Settled probably about 600 years, chiefly in the north island. Whether they found the country inhabited or not on their first arrival is uncertain, though many think they are not pure Mahoris but a mixed race. In features they often present a startling resemblance to the Algonquin and Iroquois nations of North America. Dr. Brassac's statement that they are degenerate Malays from Samoa (*Archives de Médecine Navale*, xxvi. 1876) cannot be accepted, because there never have been any Malays in Samoa. More probable is Dr. Hamy's view that they are a mixture of a woolly-haired Melanesian and a pure Mahori stock, the latter arriving about the 12th century. "Le mélange de ces deux races aurait été le principe de la formation du type Maori" (*Bul. de la Soc. de Géo.*, x. 1875, p. 109). The Maoris numbered (1874) 45,470, all but 1932 in North Island, where nineteen tribes still exist—Arawa, Ngatiporu, Ngatikahungunu, Ngaiterangi, Ngapui, Ngatimaniapoto, Ngatimaru, Ngatiawa, Ngatiraukawa, Ngatiruanui, Ngatiwhatua, Rarawa, Taranaki, Urewera, Waikato, Whanau-a-apanui, Whanganui, Whakatohea, Hauraki; in the South Island the tribes are broken up. Here the race never was numerous.
Mara Ma-Siki . .	See Solomon Islands.
Mare . . .	See Loyalty.
Marhunu . . .	Sub-Papûan tribe, interior island Ceram; distinct speech (Von Rosenberg, ii. 315), utterly unintelligible to the W. Ceramese people.
Marianne . . } Ladrone . . }	Mikronesian group, N. Pacific ; aborigines exterminated by the Spaniards during last century. Islands since repeopled chiefly from the Philippines and Carolines; hence present natives are of mixed Tagalo-Mikronesian stock.
Marowra . . .	Language, S.E. Australia ; common to all the river Darling tribes to about 350 miles above junction with Murray River.
Maruwi . . } Maros . . }	The collective name of the natives of Hog and Banyak Islands, W. coast Sumatra ; speech akin to Battak. Natives of Hog (Simalu) originally from the Padang uplands; speech still the same, with a few Atyeh affinities (Von Rosenberg, i. p. 115).
Marquesas . .	Islands, S. Pacific ; Mahori stock and speech ; two distinct dialects—N.E. and S.E. groups ; first tradi-

tionally from Vavao, *i.e.* island Vavau in Tonga; second Havaiki (spirit land), *i.e.* Savaii, *via* Tahiti, which is also mentioned in the tradition. The language agrees with these traditions, the N. dialect being closely related to Tongan, the S. to Tahitian.

Marshall . . . Islands, N. Pacific; E. from Carolines; Mikronesian stock and speech.

Massaratty . . See Boeroe.

Matabello. . . Island S.E. Goram, E. from Ceram; natives in physique resemble the Mahori.

Mauke . . . Island, Hervey group, which see.

Mbutoni . . . A roving tribe, Fiji; island Viti Levu (De Ricci, p. 14).

Mbau . . . See Fiji.

Meeringgil . . Australian tribe, W. Victoria.

Mel . . . See Efat.

Melanesian . . *i.e.* "Black Islanders," the collective name of the natives of all the islands stretching from New Guinea eastwards to Fiji, and including New Caledonia and the Loyalty group. Are of mixed Mahori and Papûan stock, hence here grouped as sub-Papûan East; see p. 607.

Menado . . . N. end, N. peninsula, Celebes; speech shows Tagala affinities.

Menangkabu . . District, W. coast Sumatra, reaching from the Battak south to the Rejangs; pure Malay stock and speech; regarded by some as the original home of the Malay race. Though differing much from High Malay, is strictly a Malay language without foreign elements.

Mentâwey . } The collective Malay name of the natives of Nassau,
Mantâwi . . } Pora, and Pagai islands, W. coast Sumatra, opposite Padang; call themselves Tchagelalegat; by Von Rosenberg described as of totally distinct type and speech from all the surrounding nations, and resembling the Mahoris in physique. See p. 612.

Mergui . . . Islands. See Silong.

Meri . . . Dyak tribe (Crawfurd).

Mikronesian . . The collective name of Marianne, Pelew, Caroline, Marshall, and Gilbert (Kingsmill) islands, N.W. Pacific; natives intermediate between the pure Mahoris and Malayan races, with Tagala, Japanese, Chinese, and most probably Papûan and Negrito elements; see pp. 617-18.

Millanau . . } Large Dyak nation, Sarawak, Borneo; estimated by
Millanow . . } Consul-General Ussher to number about 80,000 in 1878.

Mille . . . Island, Marshall group (Radack chain); well-marked Mikronesian dialect (Hale).

Millegundît . . The collective name of the Murray tribes, S.E. Australia; from *Mille*, the native name of the river, and gûndît = man, people.

Milne Bay . . S.E. coast New Guinea; see p. 609.

Minahasa. . . District at extremity N. peninsula Celebes, facing Jilolo, numerous tribes and languages of very mixed character, with S. Celebes, Malay, Papûan, and Tagala

	elements. Wallace gives specimens of the Tomohon, Langowen, Ratahan, and Belang dialects; De Clercq mentions the Bantik, Bentenan, Ponosakan, Toumbulu, Toumpakewa, Toundano, Toungsawang, and Tounsea, all differing so widely from each other as to be regarded as distinct languages.
Mincopie	A collective name for the Andaman islanders; Negrito stock; speech distinct; see p. 605.
Mindanao. Magindanao	Island, Philippines; natives of sub-Malayan and Negrito stocks. Chief tribes and languages—Manobo, Mandaya, Telacoago, Taga-baloyo, Mamamanua.
Mintira Mantra	Wild tribe, Malacca; pure Malay stock and speech.
Miriam	Papûan tribe, Torres Straits.
Misol Mysol	Island N. from Ceram: two types—sub-Papûan on coast, Papuan in interior; akin to those of Salwatty and W. New Guinea (Von Rosenberg, ii. 394.)
Mitiaro	See Hervey.
Moa.	Island, Serwati group, E. from Timor; sub-Papûan; speech nearly the same as Kissa.
Moaba	S.E. Australian tribe, about junction rivers Murray and Campaspe.
Moena Muna Pangasane	Island between Boeton and Celebes; sub-Malayan stock; speech akin to or same as that of Boeton.
Molonglo	S. Australian tribe.
Moluccas Spice	Islands, N. of Ceram, E. of Celebes; natives chiefly sub-Papûan. See Batchian, Tidor, Ternate, etc.
Monulgûndîtch.	Australian tribe, Wimmera, Victoria.
Moocherak	Australian tribe, W. Victoria, S.W. of the Pyrenees.
Moomoo	Australian tribe, Gippsland, Victoria.
Moorunde.	W. Australian tribe.
Moporh	Australian tribe, W. Australia.
Morella	See Amboyna.
Moriori	See Chatham Island.
Motu	Tribe, S.E. coast New Guinea, chiefly about Port Moresby; speech Mahori (see pp. 608, 616); extend 60 miles along the coast from Kapatsi to Kapakapa rivers; are very intelligent, and can count up to 1,000,000. May be taken as the typical Mahori people on this coast.
Mou	Mahori (?) tribe S.E. New Guinea, in several villages opposite Yule Island.
Mullungkill	Australian tribes, W. Victoria, south of L. Purrumbete.
Mumkelunk	Australian tribe, W. Victoria, between rivers Moyna and Shaw.
Mûnoba-naatpan	S.E. Australian tribe, on rivers Macalister and Thomson, Victoria.
Murda Pinna	(Big Stones), Australian tribe, Sturt's Desert; Cooper's Creek.
Murra-Murra-barap	Australian tribe: Wimmera, Victoria.
Murrumbidge	Australian tribe, Hume river.
Murung	Dyak tribe, near the Murut tribe, N. end Borneo, but speaking a different dialect (Lowe).

Murut . .	Dyak tribe, N. end Borneo, near Mount Kini Balu;
Idäan . .	speech distinct.
Mysol . . .	See Misol.
NAALA . . .	Mahori (?) tribe, S.E. New Guinea, about C. Suckling; speech distinct.
Naman . . .	Papuan tribe, S.E. New Guinea, bordering on the Ilema, but speech quite distinct.
Nancowrie . .	Tribe, Nicobar; speech distinct.
Narragûrt . .	Australian tribe, W. Victoria, east of Curdie's Creek.
Narrinyeri . .	S. Australian tribe, about the lagoons at mouth of River Murray.
Nassau . . .	Island. See Mentâwey.
Navigator . .	Islands. See Samoa.
Negori-Ampat . .	See Amboyna.
Negrito . . .	(Spanish diminutive of Negro.) The collective name of the dwarfish black races N. of equator; by some confused with the Papûans, but here classed separately for the reasons stated at p. 606. Under this heading are grouped the Aëtas of the Philippines, the Samangs of Malacca, and the Mincopies of Andaman, as in scheme, p. 598.
Neitcheyong . .	Australian tribe, W. Victoria, east of Mount William.
Nengone . . .	Tribe, New Hebrides, same as the Mare.
New Britain . .	Island, N.E. coast, New Guinea; sub-Papûan stock and speech, Papûan element greatly predominating.
New Caledonia . .	Island, S. Pacific; sub-Papûan stock and speech; best known dialects—Duauru and Yehen or Yengen. The natives are very mixed; one-fifth Mahori, two-fifths Melanesian, two-fifths a mixture of the two (Bourgarel).
New Guinea . .	At least two, probably three types—Papûan, Mahori, and Negrito, with endless mixtures, especially on N.E. and S.E. coasts. For Negrito, see *Karus;* for Mahori, see p. 616; for Papûan, see p. 607. These two meet at C. Possession, and according to Dr. Hamy the Mahoris occupy both coasts from about 148° E. longitude to East Cape, 150° 53′ E. longitude. But the bulk of the population inland is doubtless everywhere Papûan, mostly pure. All the known western languages (Dorey, Arfak, Mafor, Waigiu Island, etc.) are distinctly Papûan. This race merges eastwards with the Mahori as far as Fiji, westwards with the Malayan as far as Island Floris, both inclusive. These two subdivisions are here grouped as sub-Papûan East and sub-Papûan West respectively. The first is equivalent to *Melanesian* when correctly used; the second supersedes *Alfuro* for reasons stated at p. 595.
New Hebrides . .	Islands, S. Pacific, N.E. of N. Caledonia; sub-Papûan stock and speech everywhere except in Islands Fotuna and Aniwa, and at Mel and Fil in Island Efat, which are all Mahori colonies; still speaking Mahori dialects (Whitmee). The best known sub-Papûan languages

	are: Faté, Epi, Pama, Ambrym, Vunmarama, and Sesake.
New Ireland . } Tombra . . }	Island, N.W. Solomon Islands. Sub-Papûan stock and speech.
New Zealand . .	See Maori.
Ngapui . . .	Maori nation, originally of 35 tribes; in N. Island southwards to isthmus of Manukao.
Ngatban . . .	Australian tribe; Gippsland, Victoria.
Ngatiawa . . .	The original Maoris of Taranaki district, N. Island; traditionally from Hawaiki, *i.e.* Savaii (Samoa).
Ngatimamoe . .	Chief Maori nation in the southern island, New Zealand; nearly extinct; a few still survive on Foveaux Strait.
Ngoko . . .	See Javanese.
Nias . . .	Island off W. coast, Sumatra, S. from Hog Island; sub-Malayan stock; speech akin to Battak; two distinct varieties in N. and S. of island (Von Rosenberg, i. 144).
Nicobar . . .	Islands, Bay of Bengal; apparently two types, Mongolian inland, sub-Malayan on coast, but no Negritos, as had been suspected. See *Shom-Baeng*. The sub-Malayan tribes and idioms, as far as known, seem to be those of Great Nicobar, Car Nicobar, Nancowry, and Theressa.
Niuē . . } Savage . . }	Island, S. Pacific; 19° S. lat., 169° W. long.; natives of Mahori stock; speech has clearest affinities with Tongan.
Nousalaut . .	See Amboyna.
Nukufetau . .	See Ellice.
Nuka-Hiva . .	Island, Marquesas, N. group; distinct dialect, closely akin to Tongan. See Marquesas and Taipi.
Nuku-nono . .	See Union.
N'uther Galla . .	Australian language, formerly current where now is Melbourne.
Oelo . . .	Wild tribe, interior Sumatra; pure Malayan stock?
Ombay . . .	Island, near W. coast, Timor; sub-Papûan stock.
Ongia . . .	See Aru.
Ongtong Java . .	See Leueneuwa.
Orang . . .	The Malay word for "man," "people," "tribe," "nation," etc.
Orang-Banûwa . } -Binûah . }	*i.e.* "Men of the soil;" the collective Malay term for the uncivilised aborigines of Malay stock, in Malacca and elsewhere. See p. 621.
Orangerie Bay . .	S.E. coast, New Guinea. See p. 609.
Orang-Hindi . .	The aborigines of Waigiu Island, which see.
Orang-Kling . .	The collective Malay term for the Indians, and especially the southern Indians, settled or trading in the Archipelago. *Kling* is a corrupt form of *Telinga*, *i.e.* the *Telegus*, the chief Dravidian nation on Coromandel coast.
Orang-Kuba . .	Uncivilised tribes, Sumatra; sometimes applied to the Battas (Dr. Van Leent).
Orang-Laut . .	*i.e.* "Men of the sea;" the collective Malay term for the "sea gipsies;" see p. 621.
Orang-Malâyu . .	The collective Malay name of all the pure Malay

	peoples, in Malacca, Sumatra, and elsewhere; but generally understood of the civilised and Mohammedan Malays. See p. 621.
Orang-Salat	*i.e.* "Men of the Strait," the Orang-Laut of Malacca Strait, whence the *Cellates* of De Barros.
Orang-Sirani	The collective Malay name for the descendants of the Portuguese in Malacca, Ternate, Amboyna, and elsewhere in the archipelago, now mostly speaking a corrupt Malay, with a large mixture of Portuguese words; but in Malacca a curiously degenerate Portuguese is still current; has lost most of its inflections, and is reduced almost to the state of an isolating language.
Orang-Utan	*i.e.* Wild men of the forest. } Alternative expressions for Orang-Banûwa. See p. 621.
Orang-Gunung	*i.e.* Highlanders. }
Orang-Darat	*i.e.* Landsmen. }
Orang-Sakai	Negrito tribe, Malacca, in the mountains near the upper Tamouileng and Lébé rivers; speech distinct.
Otaheite	See Tahiti.
Owanguttha	S.E. Australian tribe, on Murray and Goulburn rivers.
Owyhee	Cook's spelling of Hawaii, which see.
PAKPAK	Battak tribe, Sumatra; with distinct speech, "differing in many respects from the Toba" (Von Rosenberg, i. p. 58).
Palaos	See Pellew.
Palavay	Tribe, S.E. New Guinea; see p. 609.
Palawan, Parajua	Island between N. coast Borneo and Philippines; natives apparently a mixture of Aëtas (Negritos) and Bisayans, darker than the latter, and with frizzly hair.
Palembang	Country, S.E. Sumatra, facing island Bangka, between Jambi and Lampung, N. and S. Natives chiefly of pure Malay stock and speech, with Javanese elements, and written with the Javanese character. Palembang is one of the earliest seats of Malay civilisation developed under Javanese influences. Here are also the *Kumring*, *Kubu*, and other indigenous peoples of sub-Malayan stock and speech.
Pallanjanmiddah	E. Australian tribe; Upper Murray and Kiewa rivers.
Pampango	Tagala nation, island Luzon; with distinct language, current in provinces Bataán, Nueva-Ecija, Pampanga, Porac, and Zambales.
Panay	Island, Philippines; two types, Negrito and Bisayan.
Panayano	Bisayan nation, Philippines; with distinct speech current in island Negros only.
Panchur, Panjor	Island, E. coast Sumatra, S.W. from Singapore; Orang-Banûwa stock and speech.
Pangasinan	Tagala nation, Philippines; with distinct language current in provinces Banguét, Zambales, Nueva-Ecija, and Pangasinan, island Luzon.
Panggarang	S.E. Australian tribe; about Moira, Victoria.
Panjurang, Pangorang	Australian tribe, Lower Goulburn river, in the Kotûpna country; perhaps the tallest native race, averaging

	six feet; are the same as the Waningotbun, now (1879) reduced to eight or ten souls; speech very euphonious.
Papaka	Tribe, S.E. New Guinea; see p. 609.
Papûan	*i.e.* "frizzly-haired;" the collective name here adopted for one of the three dark Interoceanic races, as fully explained at pp. 595-6. See also sub-Papûan East and West.
Parigi	Sub-Papûan tribe, Minahasa, N. Celebes, near Menado.
Parnkalla	S. Australian tribe, Spencer's Gulf and Port Lincoln.
Passumah	See Sarawi.
Pasundan	The Javanese name of the Sunda country, W. division Java. See Sunda.
Paumotu	See Tuamotu.
Pelew	Islands, N. Pacific, W. Carolines; Mikronesian stock and speech, marking the westernmost limits of this race.
Penrhyn	Island, S. Pacific, 9° S. lat., 179° W. long. Mahori, with an infusion of Papûan blood (Ranken); the easternmost point to which the Papûan element has been traced.
Pepukhwan, Kabaran	The collective name of the civilised Malayan tribes; Formosa.
Peru	See Ceram.
Pertobe	See Warrnambûl.
Pillawinbulluk	S.E. Australian tribe; Pyrenees mountains.
Pine-gorine	S.E. Australian tribe, at junction rivers Murray and Goulburn.
Pitcairn	Island, S. Pacific, S.E. from Gambier and Tuamotu islands. Natives half-caste English and Tahitians; speech English.
Poggy, Nassau	Island, W. coast Sumatra. See Mentâwey.
Polynesian	Rather a geographical than an ethnical term; and here accordingly rejected, as fully explained at pp. 596-7.
Ponape	Island, Carolines; well-marked Mikronesian dialect, with distinct Mahori affinities, such as the custom of tabooing words, the use of special words to chiefs, as in Samoa, etc. Grammar by Gulick (1858).
Port Carteret, Port Praslin	New Ireland tribes; sub-Papûan; vocabulary in *Voyage de l'Astrolabe*.
Port Dalrymple	Tasmanian tribe; vocabulary in *Voyage de l'Astrolabe;* extinct.
Poru	Islands. See Mentâwey.
Punnoinjon	Australian tribe, W. Victoria, east of Serra Range.
Purteet Chowel	Australian tribe, W. Victoria, S.E. of L. Boloke.
QUAIBO	Tribe, S.E. New Guinea; see p. 609.
RAIATEA	See Tahiti.
Rapa-nui	*i.e.* "Great Rapa," Easter Island, S. Pacific. Marks the extreme eastern limit of the Mahori race and speech; chief tribe Teapy; repeopled probably through Tuamotu from Tahiti. The present inhabitants cannot have been the builders of the remarkable monuments scattered over this island.

Rarotonga . .	Island, S. Pacific, Hervey group; two tribes. 1. Ngati Karika, traditionally descended of Karika from Manuka island in W., probably the Samoan *Manua;* 2. *Ngati Tangiia*, descended of Tangiia from district Faaa, Tahiti. Thus the Hervey group would seem to have been peopled from Tahiti and Samoa. Speech presents several peculiarities constituting a distinct dialect; grammar by Buzacott (1854).
Ratahan . . .	See Minahasa.
Rejang . . .	Sub-Malayan nation, S.W. coast Sumatra, stretching from the Menangkabu southwards to the Lampung country; divided into a number of "Saku," or tribes, speaking a distinct language, written in a peculiar character based on the Davanâgari. Dr. Van Leent says they are a mixed Malay and Javanese race, fairly civilised. Chief station, Bencoolen.
Rennell . . .	Island, S. Pacific, off S.W. coast S. Christoval (Solomon group); natives said to be of Mahori stock, marking the extreme W. limits of the race in this direction.
Rhio-Lingga . .	Islands, Malacca Strait. Here are three classes of Malays: Orang-Darat, "landsmen;" Orang-Utan, "wild men of the forest;" and Orang-Laut, "seafarers" (sea gipsies).
Roka . . .	Sub-Papûan tribe, with distinct speech; island Floris, Sundas.
Roma . . .	Island, E. from Wetter, N.E. of Timor; natives of sub-Malayan stock and speech.
Roro . . .	The natives of Yule island, S.E. coast New Guinea; speech quite distinct from those of mainland; and people of lighter colour; seem to be more recent arrivals from E. Polynesia; Mahori stock? (C. Stone).
Rotti . . .	Island, 20 m. off W. end Timor; natives apparently of mixed Malayan and Indian stock, with distinct speech akin to *Savoe;* mixed with Timor, Malay, and Javanese elements; are very dark, but have lank hair; therefore are not sub-Papûans like the Timorese.
Rotuma . . .	Island, N. from Fiji, W. from Samoa; 12° S. lat., 177° E. long. Mahori stock and speech, with decided sub-Papûan affinities.
Rumahkai . .	See Ceram.
SADONG . . .	Dyak tribe, on Sadong river, Sarawak, Borneo (Wallace, p. 64).
Sahoe . . .	Sub-Papûan tribe, with distinct speech; N. peninsula Jilolo; akin to Galela (Wallace).
Saint Vincent Gulf .	Australian tribe, S. coast; vocabulary in *Voyage de l'Astrolabe.*
Sakai . . .	A term nearly synonymous with Orang-Banûwa; applied by the Malays to all the rude tribes of Malacca and adjacent islands.
Sakalava . . .	Collective name of the tribes on W. coast Madagascar. Malayan stock, with a large infusion of African and Arab blood, especially in the north. Tribes mentioned by Bishop Kestell-Cornish (*Tour in N.*

	Madagascar): Behisotra, Isimahety, Tandrona, Antankara.
Sakaran . . .	Dyak tribe, Borneo (Crawfurd).
Salibabo . . }	Islands midway between Jilolo and Mindanao; sub-
Tulur . . }	Malay stock and speech.
Salwatty . . .	Island close to W. end New Guinea; natives Papûan and sub-Papûan (Von Rosenberg, i. 388).
Samang . . .	The collective name of the Negritos of Malacca. See p. 595.
Samao . . }	Islands three miles off W. end Timor; natives of sub-
Samauw . . }	Papûan stock; closely akin to those of Timor.
Samoa . . .	Islands, S. Pacific; Mahori stock and speech; the original home of the race in Pacific (see p. 614). Speech comes nearest to the primitive Mahori language, and almost alone retains the organic *s*, as in *Samoa, Savaii*, etc.; but has recently changed *t* to *k*. For the traditional home of the Samoans, see note, p. 612.
Sampit . . .	Dyak tribe, Borneo, with distinct speech; vocabulary by Tiedtke (Cust, p. 140).
Samsan . . .	See Malacca.
San Christoval . .	Island, Solomon group; two distinct sub-Papûan dialects; vocabularies in Bishop Patterson's collection.
Sandalwood . .	See Sumba.
Sanguir and . }	Islands midway between Celebes and Mindanao; natives
Siau . . . }	akin to those of Menado (Minahasa), with Tagala affinities.
Sandwich . . .	See Hawaii.
Santa Cruz . .	Islands, S. Pacific, E. of Solomon group; natives of sub-Papûan stock and speech; several distinct dialects; two or more in Sta. Cruz, one very marked in Tapoua (Tupua), several in Swallow group, three in Vanikoro (Taneanu, Tanema, and Varikoro), these last differing greatly, as appears from the comparative vocabularies in *Voyage de l'Astrolabe*.
Saparua . . }	Islands E. coast of Amboyna; speech akin to that of
Honimoa . . }	S. coast Ceram.
Sarawi . . .	Sub-Malayan nation in the Passumah district, interior of Palembang, Sumatra; distinct language written with the Rejang characters. Dr. Van Leent describes them as half-caste Battas and Javanese; are now settled.
Sasak . . }	The aborigines of Lombok, with distinct speech still
Sassak . . }	spoken in the interior and on N. coast; elsewhere Balinese is current. See Lombok.
Satawal . . .	Island Carolines; Mikronesian; vocabulary in *Voyage de l'Astrolabe*.
Savoe . . }	Islands between Sumba and Timor; natives akin in
Savu . . }	type and speech to those of Rotti, which see (Wal-
Sawee . . }	lace). But Crawfurd describes them as sub-Papûans, with frizzly hair like the Timoreans.
Serwati . . .	Islands between Timor and Timor-Laut; natives of sub-Papûan stock, with distinct speech known as Kissa, from Island Kissa, westernmost of the group. See Kissa.
Sesake . . .	See New Hebrides.

Shom-Baeng . .	*i.e.* the "Baeng tribes;" the inland people of Great Nicobar, of which there are three tribes, one on N., one near W. coast, and one about Galathea river; hitherto supposed to be Negritos akin to the Andamanese, but found by Frederick A. de Röpstorff, who recently visited them, to be of *Mongolian type*, different from the sub-Malays on coast. Jet black hair, high forehead, nose hooked but flat below, small oblique black eyes, 5 ft. 8½ in. high; speech distinct, of unknown affinities. See *Nicobar*.
Siak . . .	Malay nation E. coast Sumatra, between the Batta country and Jambi N. and S.
Siau	See Sanguir.
Sideia . . .	Formosan tribe, with distinct speech.
Sihanaka . . .	See Betsimisaraca.
Silong . . .	The collective name of the Mergui Islanders, Indian Ocean, off coast British Burmah. Sub-Malayan stock; speech distinct.
Simalu . . (Hog.)	Island W. coast Sumatra; peopled by Malays from Upper Padang; speech mixed with Battak and Atyeh elements (Von Rosenberg, i. 115). See Maros.
Simpang-Kanan Simpang-Sulambie Simpang-Sinundang Simpang-Kirie	Districts, Sumatra, bordering on the Batta country; people and speech closely akin to Singkal, which see. (Von Rosenberg, i. p. 54.)
Singkal . . .	Country Sumatra, 2° 10′ S. lat., 98° E. long.; people and language of mixed Malay, Atyeh, Battak, and Nias elements (Von Rosenberg, i. 44).
Society . . .	Islands; see Tahiti.
Solomon . . .	Islands, S. Pacific, E. from New Guinea; sub-Papûan stock and speech; several distinct languages, of which best known are—Bauro, Guadalcanar (Gera), Ulaua, Mara Ma-siki, Anudha, Mahaga, and Eddystone.
Solor . . .	Island off E. end Floris; sub-Papûan race and speech.
Sub-Papûan East .	The collective name here adopted for the mixed Mahori and Papûan race stretching from New Guinea eastwards to Fiji; equivalent to the *Melanesian* of German anthropologists. See Papûan and p. 595.
Sub-Papûan West .	The collective name here adopted for the mixed Malay and Papûan race, stretching from New Guinea westwards to Floris island. Under this heading are grouped most of the so-called *Alfuros* of the Indian Archipelago. See Papûan, and p. 595.
Suflin . . .	Tribe, Philippines, with distinct speech current in province Bontoc, Island Luzon.
Sula . . .	Islands N. from Buru, E. from Celebes; natives of sub-Malayan stock and speech.
Xulla . .	
Sulu . . .	Islands between Borneo and Mindanao; natives of sub-Malayan stock, with speech akin to the Bisayan, written in the Arabic character.
Sumanap . . .	See Madurese.
Sumatra . .	Two types, pure Malayan and sub-Malayan. The first is represented by the Palembang, Jambi, and Siak on E. coast, and Menangkabu on W. coast; the second by the Atyes (Achinese) and Battaks in N.;
Indâla . .	
Andâla . .	
Pertya . .	

	the Kubu, Abung, Lubu, Sarawi, Kumring, and Korinchi in the centre; and Regong and Lampung in S. The pure Malays are mostly Mohammedans, speaking High Malay or dialects closely related to it, written with the Arabic character; the others are partly Moslems, partly Pagans, some savage, others semi-civilised, with distinct languages written with several peculiar characters all based on the archaic Indian of the Asoka inscriptions.
Sumba Sandalwood Chandava	Island S. from Floris; natives of sub-Malayan stock, with distinct speech.
Sumbawa	Island between Lombok and Floris; natives of sub-Malayan stock and speech, with Bugis and Mangkassar affinities. Here were six distinct nations and languages before the great eruption (1815) of Mount Tomboro—Sumbanese, Bima, Dompo, Sangar, Popekat, Tombora. The last two have since disappeared, having probably perished on that occasion.
Sundanese	Sub-Malayan nation, W. section Java, as far east as province Cheribon. Area, 12,000 square miles; speech distinct, with Javanese and Malay elements in proportion of 350 in 1000 words; written generally with the Javanese alphabet. There are two varieties, the Basa-Menak or High Sundanese, and Basa-Kuring or Low Sundanese.
Strong	Island; see Ualan.
Suntah	Dyak tribe, Borneo (Crawfurd).
TABELLOR	See Galela.
Taga-baloya	Wild tribe, Philippines, Island Mindanao, province Caraga; Bisayan stock.
Tagala Tagalog	The chief nation in Luzon and Mindoro, Philippines. Malayan stock, with highly-developed language written in a peculiar character based on the Devanâgari, and current in provinces Bataán, Bulacan, Camarines, N. Cavite, Infanta, Isabela, Laguna, Manila, Morong, Nueva-Ecija, Principe, Tayabas and Rambales, Island Luzon, and exclusively in Island Mindoro, but not elsewhere in the Philippines; current also in the Marianne group, which has been partly repeopled from Luzon.
Tahiti	Island, S. Pacific. Mahori stock and speech; people traditionally from Havaiki (Savaii), Samoa; first settlement at *Havaii*, in island Raiatea.
Taipi	Tribe, island Nuku-Hiva, Marquesas; retains the organic *ng*, elsewhere in the group changed to *k* or *n*: *tangi*; N.E. Marquesas *taki*; S.E. Marquesas, *tani* • = to cry.
Tai-wan	See Formosa.
Talacaogo	Wild tribe, Philippines, Island Mindanao, province Carega; Bisayan stock.
Talaut	Island midway between Moluccas and Mindanao; sub-Malayan stock and speech, with Bisayan affinities.

Tana . . .	Island, New Hebrides; distinct sub-Papûan speech (Von der Gabelentz, i.)
Tanala . . .	See Betsimisaraca.
Tanawanko . .	Sub-Papûan tribe, with distinct speech, E. Celebes.
Tandrona . . .	See Sakalava.
Taneanu . . .	See Sta. Cruz.
Tanema . . .	See Sta. Cruz.
Tangambalanga .	Australian tribe, Upper Murray and Kiewa rivers.
Tanguiyan . } Tanguayan . } Tinguian . . }	Tagala tribes, Philippines, with distinct language current in provinces Ilocos N. and S., Island Luzon.
Tankay . . .	See Betsimisaraca.
Taoungurong . .	Australian tribe about Upper Goulburn river.
Tarawa . . .	Island, Gilbert group. Hale takes this as the typical language of these islands.
Tarrawarracka . .	S.E. Australian tribe; Port Albert and Tarreville, Victoria.
Tasmania . . .	Island, S.E. coast Australia; natives extinct. For affinities, etc., see p. 599.
Tauai . . .	Island, Sandwich group. This dialect retains the organic *t*, elsewhere changed to *k* in the Hawaii language: tua = kua, back.
Tawaju . . .	See Waju.
Tawi-Tawi . .	Island, Sulu Archipelago; same race and speech.
Tchagelalegat . .	See Mentâwey.
Teapy . . .	See Rapa-nui.
Tehulate . . .	See Ceram.
Teluti . . .	See Ceram.
Tenimber . . .	Islands E. from Timor and Serwatti; natives of sub-Malayan stock and speech.
Teor . . .	Island midway between Ceram and Ké islands. Sub-Papûan stock and speech.
Ternate . . } Târnate . . }	Island off W. coast Jilolo, 1° N. lat. Natives partly Malayan and sub-Malayan, but in most "le sang Malais prédomine" (Dr. Hamy in *Bul. de la Soc. de Géo.* xiii. p. 482).
Terrin Challum .	Australian tribe, W. Victoria, east of Salt Creek.
Terrumbehal . .	Australian tribe, W. Victoria, between river Hopkins and Fiery Creek.
Teste . . .	Island, S.E. New Guinea; see p. 609.
Teto . . .	See Timor.
Thar-a-mirttong .	S.E. Australian tribe, river Kiewa, Victoria.
Theressa . . .	See Nicobar.
Tidore . . } Todôrĕ . . }	Island just south of Ternate, W. coast Jilolo; same stock, and nearly same speech, as Ternate, which see (Dr. Hamy and Raffray). The proper native name of the island is *Todôrĕ* (Von Rosenberg, ii. 402).
Tikopia . . } Tukopia . . }	Island, S. Pacific, S. of Sta. Cruz islands. Mahori race and speech; vocabulary in *Voyage de l'Astrolabe;* has the *s* implying direct Samoan descent, and a few closed syllables implying Papûan influences.
Timor . . .	Island E. from Floris. Natives of sub-Papûan stock and speech; several distinct languages. Wallace mentions Teto and Vaiqueno in E., Brissi in W.

	Timorean proper is current generally in centre and W.; Manatoto in N.E.; and Malay is vernacular at extreme S.W. end and on adjacent islet. But see Belonese.
Timor-Laut	"Seaward Timor." Island E. from Timor; largest of the Tenimber group, which see.
Tingatingana	Australian tribe, Strezelecki's Creek; Cooper's Creek; akin to the Deeries.
Tinguian	See Tanguian.
Tippil, Dippil	E. Australian tribe, N. of Moreton Bay.
Tirtalowa-Kani	S.E. Australian tribe, between Tambo and Snowy rivers.
Tirthung	S.E. Australian tribe, about Nicholson river.
Toba	See Battak.
Tobi, Lord North	Island, N. Pacific; well-marked Mikronesian dialect.
Tobo	See Ceram.
Togean	Islands, E. coast Celebes. Natives inland sub-Papûan; with "quite distinct speech" (Von Rosenberg, ii. 263) on coast Bugis.
Tokelau	Islands. See Union.
Tombra	See New Ireland.
Tomohon	See Minahasa.
Tomore	Sub-Malayan people, E. peninsula Celebes; speech distinct; current also in Island Batchian.
Tonga, Friendly	Islands, S. Pacific, E. from Fiji; natives of Mahori stock and speech, intermediate between Samoan and Maori. Varieties are: Tongatabu, Hapai, Vavau.
Tonga-tabu	*i.e.* "Sacred Tonga;" island, Tonga group. This dialect is remarkable for the frequent change of organic *p* to *b*, a sound scarcely elsewhere occurring in any pure Mahori language; is due probably to Fijian (sub-Papûan) influence.
Tooram	Australian tribe, W. Victoria, west of Curdie's Creek.
Toto	See Manatoto.
Toula, Toulon	Tribes, S.E. New Guinea. See p. 608.
Tourahonong	Australian tribe, W. Victoria.
Tracy	Island. See Vaitupu.
Tuamotu, Paumotu	Archipelago, E. from Tahiti; Mahori stock and speech; originally from Tahiti; the Tahitian is gradually encroaching on the local dialects.
Tubuai, Tupuai	See Austral, II.
Tukopia	See Tikopia.
Tulur	See Salibabo.
Tupuan	See Sta. Cruz.
Turaja	See Celebes.
Turrubul	E. Australian tribe, S. Queensland.
Tutuila	Island, Samoa; sub-variety of Samoan; here, the practice of changing *t* to *k*, now universal in the group, seems to have first begun (Whitmee, *Samoan Grammar*, p. 1).

UALAN . .	Island, E. Carolines; Mikronesian; vocab. in *Voyage de l'Astrolabe.* "La langue d'Ualan est fort remarquable en ce qu'elle s'éloigne considérablement du Malaïo comme du polynésien," (p. 175).
Strong . .	
Uea . .	I. Island, S. Pacific; Mahori stock and speech.
Uvea . .	II. Island, Loyalty group, peopled from Wallis; hence a Mahori dialect is still current here, sub-Papûan being spoken elsewhere in this group.
Wallis . .	
Union . .	Islands (Fakaofo, Nukunono, Atafu), three degrees N. of Samoa; Mahori stock and speech; peopled direct from Samoa.
Tokelau . .	
Uolaroi . . .	Australian tribes, Queensland.
Ulaua . . .	See Solomon Islands.
Uvea . . .	See Uea.
VAIQUENO . .	See Timor.
Vaitupu . .	Island. See Ellice.
Tracey . .	
Vanikoro . . .	See Sta Cruz. The Vanikoro and Mallicolo natives are amongst the most dolichocephalous on the globe (G. Busk, in *Jour. Anthrop. Instit.*, Jan. 1877).
Viti . .	Islands, S. Pacific; sub-Papûan stock and speech in the W. group (Leeward or Ba Islands); the Lukeba, or E. group, is peopled by the Kaitongaviti, a mixed Viti and Tonga (Mahori) race; hair and speech Papûan, with Tonga elements in latter; colour, features, and religion Mahori. There are altogether fifteen distinct dialects, of which seven are known to the missionaries, and four reduced to writing, the standard being the Mbau or Bau spoken on S.E. side Viti-Levu, about Rewa delta; letter *f* unknown in W. group, introduced from Tonga, in the E. group; hence *Viti* is the collective name in former, Fiji in latter. Chief tribes—Mbau, the ruling people up to time of annexation, Macuata, Cakaudrove, Lau, Rewa, Somo Somo, Verata, Maitasiri, Mbua, Lakemba, Tai Levu, Serua, Namosi, Nadroga, Ra, Yasawa, Mbena, Narua, Mba, Vudd, Rakeraki, Vura, and in the hills the Kai Colos, still reputed cannibals (De Ricci, *Fiji*).
Fiji . . .	
Vunmarama . .	Tribe with distinct sub-Papûan speech; New Hebrides, N. side Island Whitsuntide.
WABRO . . .	Australian tribe, about river M'Leay.
Wagga-Wagga . .	S.E. Australian tribe; New South Wales, Murrumbidgee river.
Wahai . . .	See Ceram.
Waigiu . .	Islands, W. end New Guinea; natives inland Papûan, on coast sub-Papûan; speech entirely Papûan, current also on coasts of Mysol, Salwatty, N.W. New Guinea, and the islands in Geelvink Bay (Wallace, p. 529). The coast people call those of interior Orang-Hindu, *i.e.* "Indians" (Von Rosenberg, ii. 380).
("Water-island")	

Waiky-Waiky . .	S.E. Australian tribe; Murray river, above Darling Junction.
Waisamu . . .	See Ceram.
Wajau . . .	See Bajau.
Waju . . } Tuwaju . . }	The most enterprising of the Bugis nation; in centre S.W. peninsula Celebes, 3°-4° S. lat., stretching east to Gulf of Boni; have settlements in Singapore and many other seaports of the archipelago.
Wakasito . . .	See Amboyna.
Wamba-Wamba } Yamba-Yamba . }	S.E. Australian tribe; Murray river, above Darling Junction.
Wamma . . .	See Aru.
Waningotbun . .	See Panjurang.
Wanmung-Wanmung-Kur . . .	Australian tribe; L. Hindmarsh, Wimmera, Victoria.
Wanumbae . .	See Aru.
Warrnambul . } Pertobe . . }	Australia, W. Victoria, near L. Terang.
Watty-Watty . .	S.E. Australian tribe; river Murray, between Echuca and Darling Junction.
Wawurrong . .	S. Australian tribe, N. and E. of Port Phillip Bay.
Wayapo . . .	See Boeroe.
Weereitch-weereitch .	Australian tribe; W. Australia, east of river Eumeralla.
Werrupurung . .	Australian tribe, W. Victoria, east of Fiery Creek.
Wetter . . .	Island off N.E. coast Timor; same race and speech.
Whitewurndink .	Australian tribe, Wimmera, Victoria.
Whitsuntide . .	Island. See Vunmaruma.
Wiralhere . . .	E. Australian tribe, akin to the Kamilaroi.
Wiradurei . } Wiradhurri . } Wirairoi . . }	E. Australian tribes, frontier New South Wales; speech akin to Kamilaroi, and generally current along rivers Namoi, Barwan, and other tributaries of the Darling. (Grammar by Rev. James Günther).
Witowurrung . .	S. Australian tribe, about Geelong.
Wituro . . .	S.E. Australian tribe.
Wokan . . .	See Aru.
Woddowrong . .	Australian tribe; Victoria, near lake Colac.
Wooîwûrong . .	S.E. Australian tribe; near Western Point, Victoria.
Wolaroi . . .	E. Australian tribe.
Woollum . . .	Australian tribe, L. Wellington, Gippsland, Victoria.
Wollûm ba Bellûm-bellûm . . .	S.E. Australian tribe; on La Trobe river, at Rosedale and L. Reeves, Victoria.
Worajerg . . .	S.E. Australian tribe; from Howling to Dora Dora, 30 miles above Albury.
Worrîke ba Kûnang-yang . . .	S.E. Australian tribe; on rivers Mitchell, Nicholson, and Tambo, Victoria.
Wûllathara . .	S.E. Australian tribe; river Murray, at and below Moama.
XULLA . . .	See Sulla.
YAIRY-YAIRY . .	E. Australian tribe; Murray river, between Echuca and Darling Junction.
Yak-Kumban . .	S.E. Australian tribe, Darling.
Yakun . . .	See Jakun.

Yamba-Yamba	See Wamba-Wamba.
Yantruwunter	Australian tribe, Cooper's Creek.
Yaako-Yaako	S.E. Australian tribe; about L. Victoria and river Rufus; speak the Marowra language.
Yap	Island, W. Carolines; well-marked Mikronesian dialect.
Yarra-Bandini	Australian tribe, about river M'Leay.
Yarra-Yarra	Australian tribe; formerly on river Yarra-Yarra, Victoria.
Yehen Yenghen	See New Caledonia.
Yelta	S.E. Australian tribe; at junction rivers Darling and Murray.
Yerewa	Mincopie tribe, N. Andaman.
Yerre-Yerre	S.E. Australian tribe; Mildura, Lower Murray river.
Yourwychall	Australian tribe; W. Victoria, between river Wannon and Grange Burn.
Yowangillam	"Highlanders;" the collective name of the S.E. Australian tribes on the Goulburn uplands.
Ysabel	Island; see Mahaga, under Solomon Islands.
Yuarîb-Yuarîb	Australian tribe, W. Victoria.
Yukan	The collective name of the uncivilised sub-Malayan tribes, Formosa.
Yule	Island. See Roro.
ZEBU	See Cebu.
Zebuano	See Cebuano.
Zingkal	See Battak.

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